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OXYGEN GAS.

Dr. Frankland stated that he had lately been engaged in some experiments wherein he was desirous of using oxygen gas under great pressure, and for this purpose had procured the apparatus for the compression of gases made by Naeterer, of Vienna. During the employment of this apparatus an accident happened, which fortunately occasioned no serious disaster, but was the means of indicating a result which was not likely to have been anticipated, and which he considered well worthy the attention of the Society. The apparatus consisted of two parts. On the one hand, a powerful compression pump, worked by a crank and fly-wheel, which forced the oxygen or other gas into a strong cast-iron receiver, fitted with a conical screw-plug and other joints and connections of steel. The action of the pump had been maintained until twenty-five atmospheres of oxygen had been accumulated within the receiver, when suddenly this latter part of the apparatus exploded, at the same time diffusing a shower of sparks, reminding one of the phenomenon observed when iron or watch-spring was burnt in oxygen. On examining the shattered fragments of the iron receiver, it was manifest that this result had indeed happened; and it appeared that the combustion of iron was possible under the circumstances, a small quantity of oil used as a lubricant becoming, no doubt, in the first instance, ignited, and then imparting the combustion to the iron. The whole interior surface of the iron receiver was blistered and coated with fused globules of magnetic oxide of iron, the small tubular apertures through the screw-plug were widened to four-fold dimensions, and no less than half an inch of steel was burnt off the massive head of the apparatus. It was, perhaps, so far fortunate, that a defective joint rendered it impossible to obtain more than the pressure of twenty-five atmospheres, under which the apparatus exploded, for had it been augmented to forty atmospheres, the iron must have taken fire more readily, and perhaps have been completely consumed or hurled about as red-holts, endangering both life and property. The author had, by a rough calculation, arrived at the conclusion, that the heat developed by the union of half the contained oxygen with the iron, would have been sufficient to melt the cylinder, which would then have exploded by the remaining pressure of the other half of the gas. Dr. Frankland concluded by referring to the possibility of applying this principle in the construction of shells and other implements of warfare.

In answer to an inquiry on the part of the President, Dr. Frankland stated that the degree of pressure in the apparatus was estimated, not by a gauge, but by actual measurement of the oxygen gas passing in at the ordinary temperature and pressure from a pneumatic holder. It was right also to mention the fact of water and potash being likewise contained in the iron reservoir at the moment of the explosion.

Dr. W. A. Miller once met with an accident in his laboratory at King's College, which, although totally different in character from that just before narrated by Dr. Frankland, should be made known by way of warning chemists from attempting a like experiment. The speaker had been using a powerful Rühmkorff coil for the purpose of effecting the combination of the mixed oxygen and hydrogen gases in Cavendish's eudiometer, and when the first charge had thus been disposed of, the stop-cocks were opened for the admission of a fresh supply of the mixed gases. At this moment, whilst yet disconnected with the electric coil, the whole arrangement exploded, and, so far as the instantaneous character of the phenomenon could be observed, it appeared to be due to the formation of a fine deposit of spongy platinum upon the metallic wires inserted into the eudiometer, the result of the employment of an electric instrument of too great intensity. By reverting to the old method of causing the ignition by the spark from a Leyden jar, no difficulty or danger had ever been experienced.—*Chemical News.*

GAS IN ENGLAND.

Lord Derby has presented a petition in the House of Lords, from Vauxhall, against a bill promoted by the Phœnix Gas Company. As the object of the bill was to extend an existing company, he said he could not hold out any hope to the petitioners of having it rejected on the second reading; but when it was read a second time he would move that it be referred to a select committee.

At Richmond, the supply of gas is in the hands of a lessee, who has given much dissatisfaction both as to price and quality, and the directors of the company have resolved to refuse a renewal of the lease, which expires in December next, after which they propose to reduce the price as well as, no doubt, improve the quality of the gas supplied. The directors report the continued prosperity of the company, and propose to increase their works. They have just recommended a dividend of eight per cent., which has been adopted at the company's annual meeting.

The Croydon Gas Company have declared a dividend for the half-year at the rate of seven and a half per cent. (per annum, we presume) with a bonus on the old shares.

The Cuckfield Gas Company have just held their annual meeting. The directors report an improving state of affairs. They some time since reduced the price of gas to 8s. 4d. per 1,000 feet, and were pleased, and no doubt surprised, to find that the number of consumers increased, and the prospects of the company improved under the circumstances. The company have declared a dividend of five per cent. per annum.

The Tenterden Gas Company have declared a dividend of five per cent. per annum, and a reserve of £276 for additions and improvements to the works.

The Longton Gas Company's directors have presented a congratulatory report to their shareholders, recommending the payment of a dividend of seven per cent. In addition, a considerable sum has been placed to the credit of the guarantee fund.

The Wolverhampton Gas Company have announced another reduction in the price of gas—namely, from 3s. 4d. per 1,000 cubic feet, the present maximum price, to 3s. per 1,000 (thirteen candles). The Chairman states that this is the sixth reduction made in seven years, and that the total diminution made in the price since the commencement of 1857, is 2s. per 1,000 cubic feet, or forty per cent. upon the amount then charged—namely, 5s. per thousand. We doubt not, remarks the local *Chronicle*, that the directors, in anticipating a large accession of customers as the result of the lowering of the rate, will in due time find their expectations fully realized.

The Dudley Gas Company have resolved to make a a further reduction in the price of their gas.

The Malmesbury Gas Company have reduced the price of their gas 10d. a thousand. There has been for some time a contention between the company and the consumers on this point, the latter stating that the reduction would be followed by increased consumption; but the company have hitherto refused, mainly on the ground that the dividends have not yet averaged five per cent. Should the present reduction be met by a proportionate increase of consumption, they will on that event make a still further reduction. The present price is 6s. 8d. per thousand, and the contract price of coal 17s. 6d. per ton.

The inhabitants of the outlying villages round Warwick are exerting themselves to obtain gas. Several meetings have been held, at which speeches highly favorable to the movement have been made.

The Chard Gas and Coke Company have been compelled by threat of a new company to reduce the price of gas from 7s. 6d. to 6s. 6d., and improve it, both in quality and quantity.

The West Bromwich Commissioners have petitioned Parliament, praying that, in the Act sought for by the Birmingham and Staffordshire Gas Companies, the price of gas to persons consuming less than 25,000 feet per quarter be restricted to 2s. 11d.; to those consuming over that and less than 100,000 feet, 2s. 7d.; and to those consuming more than 100,000 feet, 2s. 3d.; also that incoming tenants be not liable to pay arrears for gas due by previous occupants, or have their supply stopped on refusal.

At a meeting of the Stockport Town Council, held on Monday last, the accounts for the year 1863, presented by the gas committee, were adopted. It appeared that, after paying five per cent. to the council on the capital invested in the works (notwithstanding the large and excessive amount of rates and taxes paid, as compared with former years) there was a balance left of £3,666 18s. 3d. This balance, with the interest paid, would be equal to a dividend of about 11.25 per cent. on the invested capital. The quantity of gas produced in the year was 74,086,000 cubic feet, being an increase of eight and a quarter millions of feet over the year 1862, though considerably under the ordinary quantity of gas produced at the works when all the cotton-mills are working full time. The "leakage," compared with the two or three preceding years, had been reduced to an extent of seven per cent., which fact, of itself, accounted for a considerable portion of the large balance left in the hands of the gas committee. The wise policy of a reduction in the price of the gas (of about twenty-four candles illuminating power) from 5s. outside, and 4s. 6d. inside, the borough, to one uniform rate of 4s. per 1,000 feet to ordinary, and 3s. 6d. per 1,000 feet to the largest consumers, took effect on the 1st January last.

The annual report of the Cockermouth Gas-light Company's directors states that, in accordance with a resolution passed at the last annual meeting, the price of gas had been reduced to consumers from 5s. to 4s. 6d. per 1,000 feet. The sum of £105 had been expended during the year in laying new mains, &c.; but, after paying all expenses, a balance sufficiently large remained to enable the committee to declare a dividend at the rate of eight per cent. per annum. The report was unanimously adopted by the meeting.

At Cardigan, St. David's day was a greater day than usual, from the opening of the newly-erected gas-works to supply the town for the first time with gas. Mr. T. Andrews, of Swansea, is the engineer, and Mr. J. Vicary, of Exeter, was the contractor.

The South Shields Gas Company have declared a dividend for the past half-year at the rate of nine per cent. per annum on paid-up capital. They have also authorized an extension of their works on account of increased consumption of gas.—*London Builder.*

GAS-LIGHT COMPANIES IN THE UNITED STATES.

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. Per Sh. $	Semi-Ann'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1857	ADRIAN	Mich.	50,000	50	—	May & November.	4,000	3 50	....	....	
1856	AKRON	O.	20,000	33⅓	—	Do.	3,500	3 00	....	....	
1845	ALBANY	N. Y.	250,000	20	4	January & July.	65,000	3 00	120	....	None in market.
1858	ALBION	N. Y.	30,000	100	—	Do.	3,000	3 80	....	....	
1851	ALEXANDRIA	Va.	106,730	—	—	City Works.	9,000	3 50	....	....	
1852	ALLEGHANY	Pa.	200,000	25	4	May & November.	25,000	3 00	....	....	
1853	ALLENTOWN	Pa.	60,000	100	3½	Do.	5,000	3 50	....	....	
1857	ALTON	Ill.	75,000	—	—	Private Works.	4,000	3 50	....	....	
1859	ALTOONA	Pa.	40,000	20	4	January & July.	5,000	3 00	....	....	
1859	AMESBURY AND SALISBURY	Mass.	200,000	25	—	Do.	7,000	4 00	....	....	
1858	ANNAPOLIS	Md.	100,000	25	—	Do.	4,000	4 00	....	....	
1858	ANN ARBOR	Mich.	25,000	50	5	March & September.	5,500	4 00	....	....	
1858	ASTORIA	N. Y.	20,000	50	—	Do.	6,000	4 00	....	....	
1855	ATLANTA	Ga.	150,000	25	5	January & July.	12,000	5 00	....	....	
1857	ATTLEBORO'	Mass.	6,000	50	3	Do.	2,000	6 00	....	....	
1850	AUBURN	N. Y.	80,000	50	5	Do	10,000	7 00	....	....	
1851	AUGUSTA	Ga.	80,000	25	8	Do.	9,000	6 00	....	....	
1838	AUGUSTA AND HALLOWELL	Me.	84,700	50	5	Do.	10,000	4 00	....	...	
1860	AURORA	Ind.	110,000	—	—	Private Works.	3,500	3 50	....	...	{ Formerly used Sanders' Water-Gas. Recently altered to Coal Gas-Works.
1817	BALTIMORE	Md.	550,000	100	5	June & December.	150,000	2 50	150	....	None for sale.
1852	BANGOR	Me.	120,000	100	2½	January & July.	12,000	3 00	100	....	
1855	BATAVIA	N. Y.	32,000	20	4	Do.	2,500	4 00	100	100	Stock firm. Good works and well managed.
1838	BATH	Me.	65,000	100	3	April & October.	10,000	3 75	...	...	
1859	BATH	N. Y.	15,000	50	—	May & November.	3,000	7 00	....	....	
1861	BATTLE CREEK	Mich.	15,000	—	—	January & July.			....	....	
1858	BELFAST	Me.	14,000	100	—	Do.	7,000	7 00	....	....	
1856	BELLEFONT	Pa.	20,000	25	2	Do.	3,500	4 00	....	....	
	BELOIT	Wis.	30,000	—	—	Do.	4,000	4 00	....	....	
1854	BETHLEHEM	Pa.	50,000	50	4	June & December.	2,000	3 20	...	....	
1859	BEVERLY	Mass.	40,000	100	—	January & July.	4,000	4 00	....	....	
1858	BINGHAMPTON	N. Y.	50,000	50	3½	Do.	10,000	4 00	....	....	
1859	BIRMINGHAM	Pa.	40,000	50	—	Do.	4,000	4 00	....	....	
1855	BLOOMINGTON	Ill.	40,000	50	—	Do.	6,000	4 00	...	....	
1858	BORDENTOWN	N. J.	50,000	25	3	June & December.	4,000	3 80	....	....	
1822	BOSTON	Mass.	1,000,000	500	5	Do.	130,000	2 25	....	....	
1859	BRATTLEBORO'	Vt.	21,000	—	—	Do.	3,000	4 00	....	....	
1851	BRIDGEPORT	Ct.	90,000	25	4	January & July.	10,000	4 00	90	....	Passed last dividend.
1857	BRIDGETON	N. J.	50,000	20	—	Do.	5,000	4 00	....	....	
1856	BRISTOL	Pa.	30,000	25	3	February & August.	3,000	4 00	....	....	
1855	BRISTOL	R. I.	35,000	50	2	January & July.	6,000	4 00	....	....	
1859	BROCKPORT	N. Y.	25,000	100	3	Do.	1,500	4 00	....	....	
1853	BROOKLINE	Mass.	66,000	100	3½	February & August.	3,500	3 50	....	....	
1825	BROOKLYN	N. Y.	2,000,000	25	5	January & July.	75,000	2 50	170	160	
	BROWNSVILLE	Pa.				Do.			....	....	
1848	BUFFALO	N. Y.	600,000	50	5	Do.	70,000	2 90	140	125	
1852	BURLINGTON	N. J.	100,000	25	3½	Do.	5,000	4 00	105	....	
1853	BURLINGTON	Vt.	75,000	25	2½	Do.	10,000	4 50	....	....	
1859	BURLINGTON	Iowa.	65,000	50	—	Do.	8,000	4 00	....	....	
1861	CALAIS	Me.	90,000	100	—	Do.	10,000	3 50	....	...	
1852	CAMBRIDGE	Mass.	300,000	100	5	February & August.	20,000	3 50	100	97½	
1852	CAMDEN	N. J.	300,000	100	3	April & October.	15,000	3 85	105	100	
1853	CANANDAIGUA	N. Y.	50,000	50	—	January & July.	3,000	4 00	90	80	
1856	CANTON	O.	19,000	50	6	March & September.	6,000	3 00	....	....	
1858	CAPE ISLAND	N. J.	80,000	100	—	October.	10,000	6 00	....	....	{ Watering place,—These Works only run in summer.
1860	CARBONDALE	Pa.	16,000	25	—	March & September.	5,000	4 00	....	....	
1855	CARLISLE	Pa.	30,000	25	—	January & July.	4,000	4 00	.. .	...	
1856	CATASAUQUA	Pa.	15,000	25	5	May & November.	2,000	4 00	....	....	
1858	CATSKILL	N. Y.		—	—	Private Works.	3,000	3 00	....	....	Owned by G. T. Sutton.
1857	CHAMBERSBURG	Pa.	30,000	25	..	January & July.	3,000	4 00	....	....	
1846	CHARLESTON	S. C.	723,800	25	4	Do.	50,000	4 00	....	....	
1851	CHARLESTOWN	Mass.	200,000	50	4	Do.	30,000	3 00	....	.. ..	
1858	CHARLOTTE	N. C.	14,000	50	10	March & September.	3,500	6 00	....	....	
1859	CHARLOTTEVILLE	Vt.	15,000	25	—	Do.	4,000	4 50	....	...	
1851	CHELSEA	Mass.	100,000	100	3½	January & July.	8,000	3 50	....	....	
1856	CHESTER	Pa.	35,000	25	3	April & October.	4,000	4 00	....	....	
1849	CHICAGO	Ill.	1,300,000	25	5	January & July.	100,000	2 50	150	140	Very scarce. Stock wanted.
1857	CHICOPEE	Mass.	50,000	20	—	Do.		4 00	....	....	
1851	CHILLICOTHE	O.	40,000	25	4	Do.	12,000	3 50	....	....	
1841	CINCINNATI	O.	1,600,000	100	5	Do.	225,000	2 50	....	....	
1859	CITIZENS', BROOKLYN	N. Y.	1,000,000	20	—	Do.	185,000	3 00	128	125	
1860	CITIZENS', READING	Mass.	90,000	100	—				....	....	
	CLARKSVILLE	Tenn.	100,000	60	—	Do.	5,000	4 00	....	....	
1860	CLAREMONT	N. H.	20,000	100	—	March & September.	3,000	4 00	....	....	
1846	CLEVELAND	O.	200,000	10	5	January & July.	20,000	3 00	....	....	
1858	CLINTON	Mass.	30,000	500	5	Do.	3,000	4 00	....	...	
1859	CLYDE	N. Y.	10,000	50	4	Do.	2,500	4 00	....	....	
1854	COHOES	N. Y.	50,000	20	3½	April & October.	5,000	3 60	....	....	
1860	COLD SPRING	N. Y.	30,000	50	—	Do.	3,500	4 00	95	....	{ Formerly Rosin-Gas, but now Coal. A well managed company. Stock firmly held.
1860	COLD WATER	Mich.	25,000	50	5	January & July.	4,000	4 60	....	....	
1852	COLUMBIA	Pa.	37,500	25	—	Do.	4,000	3 50	....	....	
1852	COLUMBIA	S. C.	44,000	25	4	Do.	6,000	6 00	...	....	
1857	COLUMBIA	Cal.	50,000	25	—	Do.	4,500	10 00	....	....	
1858	COLUMBUS	Ga.	54,000	25	5	Do.	5,000	7 00	....	....	
1850	COLUMBUS	O.	100,000	10	6	Do.	30,000	3 00	....	....	
1858	CONCORD	N. H.	50,000	50	5	Do.	8,000	3 50	....	....	
1858	COVINGTON AND NEWPORT	Ky.	100,000	50	3½	Do.	28,000	4 00	...	....	
1854	CUMBERLAND	Md.	60,000	50	3	Do.	6,000	4 00	....	....	
1857	DANBURY	Ct.	50,000	25	4	Do.	2,000	3 75	....	...	
1856	DANVILLE	Pa.	30,000	25	—	June & December.	3,000	4 00	....	....	
1855	DAVENPORT	Iowa.	56,000	100	—	Do.	6,000	5 00	....	...	
1848	DAYTON	O.	50,000	25	5	February & August.	8,000	3 50	....	.. ..	
1858	DEDHAM	Mass.	40,000	50	—	January & July.	3,000	4 00	....	....	
1860	DELAWARE	O.	30,000	25	—	Do.	2,500	3 00	....	....	
1849	DETROIT	Mich.	500,000	50	5	Do.	30,000	3 50	160	150	Excellent tock. No sales.
1860	DOBBS' FERRY	N. Y.	25,000	—	—	Do.	3,000	4 00	....	....	
1854	DORCHESTER	Mass.	150,000	100	—	Do.	14,000	4 00	....	....	
1859	DOVER	Del.	12,000	—	—	Private Works.	2,000	4 00	....	....	
	DOVER	N. H.				January & July.			....	....	
1857	DOYLESTOWN	Pa.	50,000	—	—	Do.	3,000	4 00	....	....	
1854	DUBUQUE	Iowa.	50,000	115	3½	Do.	17,000	4 50	....	115	This stock is wanted at par.
1853	EAST BOSTON	Mass.	123,000	25	4	Do.	20,000	3 50	.....	145	No transactions.
1858	EAST GREENWICH	R. I.	11,200	100	15	Do.	3,000	7 00	....	....	
1861	EAST HAMPTON	Mass.	10,000	25	—	Do.	5,000	9 00	....	....	
1861	EAST NEW YORK	N. Y.	50,000	50	—	Do.	12,000	3 50	....	....	
1857	EASTON	Md.	9,000	10	—	Do.	1,500	7 00	....	....	
1850	EASTON	Pa.	125,000	50	4	June & December.	6,000	3 60	....	....	
1856	EASTPORT	Me.	50,000	55	—	Do.	3,000	4 00	....	....	
1850	ELIZABETH	N. J.	100,000	20	4	January & July.	14,000	3 50	....	....	
	ELLICOTT'S MILLS	Md.	10,000	—	—	Do.	4,000	4 00	....	....	
1852	ELMIRA	N. Y.	50,000	25	3½	Do.	5,000	4 00	....	....	
1852	ERIE	Pa.	68,000	50	3½	June & December.	10,000	3 00	....	....	
1838	EVANSVILLE	Ind.	60,000	50	4	January & July.	12,000	4 00	110	....	
	EXETER	N. H.	60,000	—	—	Do.	12,000		....	....	A very good Company.
	FAIR HAVEN	Ct.	20,000	25		Do.	8,000	4 00	....	....	
1847	FALL RIVER	Mass.	26,000	—	—	Private Works.	12,000	3 50	....	....	
1859	FAYETTEVILLE	N. C.	25,000	100	6	January & July.	7,000	6 00	....	....	
	FIFTH WARD (Milwaukee)	Wis.	50,000	25	—	Do.	10,000	4 00	....	....	
1857	FISHKILL	N. Y.	10,000	20	—	April & October.	1,500	9 00	....	....	Make Petroleum-Gas.
1858	FITCHBURG	Mass.	100,000	50	3	January & July.	5,000	4 00	....	....	
1859	FLEMINGTON	N. J.	20,000	—	—	Do.	3,000	4 00	....	....	
1855	FLUSHING	N. Y.	25,000	50	1½	March & September.	6,500	4 00	..	....	
1858	FOLSOM	Cal.								....	
	FORT WAYNE	Ind.	40,000	25	—	Do.	6,000	4 00		....	
1851	FRANKFORT	Ky.	50,000	—	—	City Works.	5,500	4 50		....	
1851	FREDERICK CITY	Md.	56,000	100	—	January & July.	5,000	6 70	...	....	
1854	FREDERICKSBURG	Va.	72,500	50	5	Do.	4,500	4 00	....	....	
1855	FREDONIA (Natural Gas)	N. Y.	10,000	100	—	Do.	2,000	4 00	....	....	Unlimited supply of Natural Gas.
1856	FREEPORT	Ill.	20,000	100	—	May & November.	10,000	4 00	....	...	

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When Chartered.	Town.	State.	Chartered Capital.	Par Val. Per Sh. $	Semi-Ann'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1859	Fremont	O.	25,000	25	—	May & November.	2,000	4 50	....	....	
1858	Fulton	N. Y.	12,000	100	—	Do.	4,000	7 00	....	....	
1855	Galena	Ill.	70,000	100	—	Do.	8,000	4 00	....	....	
1859	Galion	O.	25,000	25	—	January & July.	1,800	3 00	....	....	
1858	Galveston	Texas.	150,000	50	—	May & November.	7,000	6 00	....	....	
1854	Gardiner	Me.	100,000	50	4	Do.	8,000	4 00	....	....	
1853	Geneva	N. Y.	75,000	25	2½	Do.	6,000	4 00	....	....	
1851	Germantown.	Pa.	Merged	into	the	Philadelphia Works.	12,000	2 25	....	....	
1859	Gettysburg	Pa.	20,000	50	3	January & July.	2,500	4 00	....	....	
1854	Glenn's Falls	N. Y.	35,000	50	3	February & August.	4,000	4 00	....	....	
1854	Gloucester	Mass.	40,000	50	—	January & July.	5,000	3 50	....	....	
1857	Gloversville	N. Y.	15,000	25	—	Do.	3,000	3 50	....	....	
1858	Grand Rapids	Mich.	50,000	20	—	Do.	3,000	4 00	....	....	
1855	Great Barrington	Mass.	5,000	100	5	April & October.	2,000	7 00	....	....	
1849	Great Falls	N. H.	50,000	100	3	Do.	3,000	4 00	....	....	
1860	Greenfield	Mass.	20,000	50	2	January & July.	2,500	4 00	....	....	
1853	Greenpoint	N. Y.	100,000	50	5	Do.	20,000	3 00	....	....	Close corporation.
1859	Greensboro'	N. C.	12,000	50	—	April & October.	3,000	7 00	....	....	
1858	Greensburg	Pa.	30,000	25	3	May & November.	2,000	3 00	....	....	
1854	Hagerstown	Md.	15,000	20	—	January & July.	2,000	6 00	....	....	
	Hamilton	O.	15,000			Do.			....	....	
1859	Hannibal	Mo.	100,000	100	—	Do.	6,000	3 50	....	....	
1857	Harlem	N. Y.	350,000	50	3½	Do.	25,000	3 00	....	145	
1855	Harrisburg	Pa.	100,000	—	4	Do.	5,000	4 00	....	....	
1849	Hartford	Ct.	200,000	25	4	Do.	25,000	3 00	150	140	Stock in demand.
	Hastings	N. Y.				Do.	8,000	4 00	....	....	
1853	Haverhill	Mass.	50,000	50	—	Do.	5,000	4 00	....	....	
1859	Haverstraw	N. Y.	20,000	100	—	Do.	5,000	4 00	....	....	
1861	Hayesville	Mass.	15,000	25		Do.	4,000	4 00	....	....	
1859	Hempstead	N. Y.	16,000	25	—	Do.	1,000	4 00	....	....	
1862	Hoboken	N. J.	100,000	25	3	Do.	30,000	2 50	....	100	Works not yet built.
1856	Hollidaysburg	Pa.	30,000	25	2	Do.	4,000	3 50	....	....	
1861	Holyoke	Mass.	20,000	25	—	Do.	3,000	4 00	....	....	
1861	Homer & Cortlandt	N. Y.	40,000	100	—	Do.	6,000	4 00	....	....	
1854	Honesdale	Pa.	30,000	25	3	Do.	2,500	4 00	....	....	
1860	Hornellsville	N. Y.	12,000	50	—	Do.	2,000	4 00	....	....	
1853	Hudson	N. Y.	50,000	100	3½	February & August.	3,000	4 00	....	....	
	Hunter's Point	N. Y.									
1857	Huntington	Pa.	18,000	50	3	Do.	2,000	3 50	....	....	
1856	Huntsville	Ala.	7,325	25	—	June & December.	2,000	5 00	....	....	
	Indianapolis	Ind.	150,000	—	—	Do.	15,000	5 00	....	....	
1857	Iowa City	Iowa.	40,000	50	—	February & August.	4,000	4 50	....	....	
1852	Ithaca	N. Y.	75,000	25	3½	January & July.	6,000	4 00	....	....	
1857	Jackson	Mich.	25,000	50	5	Do.	6,000	3 50	....	....	
	Jackson	Miss.	80,000	50	—	Do.	4,000	4 50	....	....	
	Jackson	Cal.	50,000	30	—	Do.	4,000	10 00	....	....	
	Jacksonville	Flor.	30,000	20	—	Do.	2,000	7 00	....	....	
	Jacksonville	Ind.	50,000	50	—	Do.	4,000	5 00	....	....	
1858	Jacksonville	Mo.	25,000	25	—	Do.	7,000	6 00	....	....	
1856	Jamaica	N. Y.	20,000	—	4	Do.	6,000	4 00	....	....	
1858	Jamaica Plain	Mass.	75,000	100	3½	Do.	3,000	3 50	....	....	
	Jamestown	N. Y.	25,000	—	—	Do.	4,000	4 00	....	....	
1856	Janesville	Wis.	50,000	100	—	Do.	12,000	4 00	....	....	
	Jeffersonville	Md.	30,000	25		Do.	4,000	4 00	....	....	
1853	Jersey City	N. J.	300,000	—	5	Do.	30,000	3 00	150	....	No sales since formation of Hoboken Co.
1858	Jersey Shore	Pa.	15,000	25	—	Do.	2,000	3 70	....	....	
1856	Johnstown	Pa.	80,000	25	3	Do.	8,000	3 00	....	....	
1857	Joliet	Ill	300,000	100	—	June & December.	6,000	4 00	....	....	
1858	Kalamazoo	Mich.	30,000	50	5	Do.	10,000	4 00	....	....	
1860	Keene	N. H.	60,000	100	—	Do.	4,500	4 00	....	....	
1855	Keokuk	Iowa.	100,000	100	—	January & July.	10,000	4 50	....	....	
1855	Kingston	Pa.	50,000	50	—	Do.	3,000	4 00	....	....	
1859	Kittanning	Pa.	20,000	—	—	Doubtful.	5,000	4 00	....	....	Said to be a fraud.
1854	Knoxville	Tenn.	63,000	—	—	April & October.	4,000	5 00	....	....	
1860	Laconia	N. H.	20,000	100	—	Do.	4,000	6 00	....	....	
1859	La Crosse City	Wis.	100,000	50	—	June & December.	10,000	8 00	....	....	Petroleum and Wood Gas.
1854	Lafayette	Ind.	60,000	50	4	January & July.	10,000	3 25	....	....	
1856	Lambertville	N. J.	30,000	25	—	Do.	2,600	4 00	....	....	
1849	Lancaster	Pa.	100,000	50	4	Do.	10,000	3 00	....	....	
1856	Lancaster	O.	25,000	100	5	Do.	5,000	3 50	....	....	
1855	Lansinburg	N. Y.	25,000	100	—	Private Works.	7,000	4 00	....	....	
1849	Lawrence	Mass.	200,000	100	4	February & August.	15,000	3 50	....	....	
1859	Leavenworth	Kansas.	200,000	25	—	Private Works.	15,000	4 00	....	....	
1856	Lebanon	Pa.	26,000	50	—	February & August.	5,000	4 00	....	....	
1861	Le Roy	N. Y.	25,000	50	—	Do.	4,000	4 00	....	....	
1858	Lewisburg	Pa.	20,000	100	—	January & July.	4,000	4 00	....	....	
1852	Lewiston	Me.	100,000	100	3	Do.	10,000	3 20	....	....	
1856	Lewistown	Pa.	30,000	50	3	April & October.	3,000	3 10	....	....	
1853	Lexington	Ky.	100,000	25	4	January & July.	5,000	4 00	....	....	
1853	Little Falls	N. Y.	112,000	25	—	Do.	3,500	7 00	....	....	
1861	Little Rock	Ark.	20,000	—	—	Do.	5,000	6 00	....	....	
1858	Lockhaven	Pa.	28,000	—	—	Do.	3,000	4 00	....	....	
	Lockport	N. Y.	100,000	50	—	Do.	4,000	4 00	....	....	
	Logansport	Ind.	40,000		5	April & October.	5,000	4 00	105		But $481,400 stock has been sold. This Company has a large contingent fund and undivided profit on hand.
1838	Louisville	Ky.	600,000	50	6	January & July.	80,000	2 50	125	....	
1849	Lowell	Mass.	200,000	25	5	Do.	50,000	3 25	....	....	
1852	Lynchburg	Va.	70,000	25	5	Do.	6,000	3 80	....	....	
1852	Lynn	Mass.	55,000	50	4	Do.	20,000	4 00	....	....	
1859	Lyons	N. Y.	30,000	100	—	Do.	4,000	4 00	....	....	
1852	Macon	Ga.	75,160	25	6	Do.	5,000	5 00	....	....	
1851	Madison	Ind.	160,000	25	3	Do.	10,100	3 50	....	....	
1855	Madison	Wis.	100,000	25	—	Do.	5,000	5 00	....	....	
1854	Malden & Melrose	Mass.	50,600	25	3	February & August.	5,000	4 00	....	....	
1852	Manayunk	Pa.	40,000	100	—	Do.	7,000	4 00	....	....	
1852	Manchester	N. H.	100,000	100	5	January & July.	25,600	3 00	....	....	
1830	Manhattan (N. Y. City)	N. Y.	4,000,000	50	5	Do.	600,000	2 50	....	....	
	Mansfield	O.	25,000	—	—	Do.	10,000	4 00	....	....	
1854	Marblehead	Mass.	40,000	100	3	Do.	1,000	4 00	....	....	
	Marlboro'	Mass.	20,000	—	—	Do.	8,000	4 00	....	....	
	Mauch Chunk	Pa.	50,000	50	—	Do.	7,000	4 00	....	....	
1857	Marietta	O.	50,000	50	—	Do.	7,000	4 00	....	....	Stock firm.
1860	Marion	O.	12,000	25	5	April & October.	1,500	18 55	....	....	
1858	Marysville	Cal.	50,000	100	—	January & July.	4,000	2 50	....	....	
1857	Massilon	O.	20,000	25	—	Do.	5,000	3 00	....	....	
1855	Meadville	Pa.	39,500	25	—	Do.	4,000	3 50	....	....	
	Medina	N. Y.	2,000	100	—	Do.	2,000	7 00	....	....	
1852	Memphis	Tenn.	300,000	100	5	June & December.	12,000	5 00	....	....	
	Meriden	Ct.	20,000			Do.			....	....	
1859	Metropolitan (N. Y. City)	N. Y.	1,000,000	100	—	January & July.	200,000	2 50	....	....	
1859	Middleboro'	Mass.	15,000	—	—	Private Works.		6 00	....	....	
1858	Middletown	Ct.	50,000	25	3	March & September.	5,000	3 80	....	....	Owned by G. T. Sutton.
	Middletown	N. Y.		25	—	Private Works.	3,000	3 00	....	....	
	Milford	Mass.	20,000	—	—	Do.		4 00	....	....	
	Milledgeville	Ga.	100,000	50	—	Do.		5 00	....	....	
	Milton	Pa.	10,000			Do.			....	....	
1847	Milwaukee	Wis.	400,000	50	5	January & July.	24,000	3 50	150	....	
1852	Mobile	Ala.	200,000	—	—	Do.	20,000	4 50	....	....	
1836	Monroe	Mich.	40,000	50	—	Do.	5,000	3 50	50	....	
1852	Montgomery	Ala.	100,000	25	4	February & August.	7,000	6 00	....	....	
1856	Montpelier	Vt.	30,000	25	3	January & July.	5,000	4 50	....	....	
1859	Morrisania	N. Y.	30,000	50	—	Do.		4 00	....	....	
1859	Morristown	N. J.	18,000	50	—	Do.	3,500	4 00	....	....	
1854	Mount Holly	N. J.	16,650	25	3	April & October.	2,000	7 00	....	....	
	Mount Vernon	O.	50,000	100	—	Do.		4 00	....	....	
1857	Muscatine	Iowa.	50,000	100	—	January & July.	3,000	4 50	....	....	
1854	Nantucket	Mass.	50,000	100	3	February & August.	6,000	4 00	....	....	

GAS-LIGHT COMPANIES IN THE UNITED STATES.—Continued.

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. per Sh. $	Semi-Ann'l Div.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1852	Nashua	N. H.	45,000	50	3½	January & July.	10,000	$ 50	....	....	
1850	Nashville	Tenn.	200,000	50	5	Do.	25,000	3 50	....	....	
1858	Natchez	Miss.	46,000	50	—	Do.	20,000	5 00	....	....	
	Nevada City	Cal.							....	....	
1852	New Albany	Ind.	200,000	50	3½	Do.	16,000	3 50	....	....	
1846	Newark	N. J.	362,000	50	5	Do.	45,000	3 62	130	....	Always a favorite stock.
1856	Newark	O.	30,000	100	—	Do.	7,000	5 40	....	....	
1852	New Bedford	Mass.	130 000	100	5	Do.	15,000	2 90	102	....	Well managed and kept quiet.
1859	Newbern	N. C.	22,000	100	6	Do.	6,000	3 50	....	....	
	New Britain	Ct.	30,000	20	5	Do.	3,000	4 00	....	....	
1851	New Brunswick	N. J.	100,000	20	4	Do.	8,000	3 00	115	....	
1852	Newburg	N. Y.	67,000	20	4	Do.	10,000	4 00	105	....	
1852	Newburyport	Mass.	150,000	10	4	Do.	9,000	4 00	92½	....	
1857	Newcastle	Del.	32,300	10	3	Do.	4,000	4 00	90	....	
1847	New Haven	Ct.	250,000	25	4	Do.	30,000	3 00	155	....	None in market.
1858	New London	Ct.	70,000	50	3	Do.	12,000	4 00	105	....	
1835	New Orleans	La.	1,500,000	100	6	Do.	120,000	4 00	180	....	
1858	Newport	R. I.	130,200	100	4	Do.	10,000	3 50	112	....	
1854	Newton & Watertown	Mass.	300,000	100	2	Do.	10,000	4 00	....	....	
	Newton	N. J.	30,000	—	—	Do.	3,000	4 00	....	....	
	Newton	Pa.	20,000	50	—	Do.	2,500	4 00	....	....	
	Newtown	N. Y.									
1828	New York	N. Y.	1,000,000	50	5	May & November.	100,000	2 50	300	....	
1859	Niagara Falls	N. Y.	15,000	25	—	Do.	3,000	4 00	90	....	
	Norfolk	Va.	60,000	25	—	Do.	40,000	4 00	....	....	
1853	Norristown	Pa.	41,700	25	4	June & December.	8,000	3 50	....	....	
1855	North Attleboro'	Mass.	50,000	100	3½	Do.	6,000	4 00	....	....	
	Northern Liberties	Pa.	400,000	25	7	City Works.	40,000	2 50	....	....	
	North Adams	Mass.	25,000	—	—	March & September.	30,000	4 00	....	....	
1856	Northampton	Mass.	35,000	25	3	January & July.	4 500	4 00	....	....	
1859	North Bridgewater	Mass.	16,000	100	4	June & December.	1,000	7 00	....	....	
1856	Norwalk	Ct.	30,000	150	4	February & August.	6,000	4 00	....	....	
1859	Norwalk	O.	30,000	25	—	January & July.	4,000	4 00	....	....	
1854	Norwich	Ct.	75,000	25	3½	Do.	12,000	3 50	....	....	
1861	Norwich	N. Y.	12,000	50	—	Do.	2,500	4 00	....	....	
1859	Nyack	N. Y.	20,000	100	—	Do.	2,500	4 00	....	....	
1860	Oberlin	O.	10,000	—	—	Do.	1,200	4 00	....	....	
1855	Ogdensburg	N. Y.	75,000	50	5	Do.	9,000	4 00	....	....	
1859	Orange	N. J.	65,000	25	—	Do.	6,000	3 50	....	....	
1852	Oswego	N. Y.	81,250	100	3½	Do.	15,000	4 00	105	....	
1855	Ottawa	Ill.	45,000	100	6½	Do.	6,000	4 00	....	....	Good works, built by Hoy, Jr., & Kennedy.
1856	Owego	N. Y.	40,000	50	3½	Do.	5,000	4 00	....	....	
1860	Owensboro'	Ky.	25,000	25	—	Do.	4,000	3 50	....	....	
1856	Paducah	Ky.	75,000	100	—	May & November.	4,000	5 00	....	....	
1861	Painsville	O.	40,000	25	5	Do.	2,500	5 00	....	....	
1856	Palmyra	N. Y.	12,000	25	—	January & July.	3,000	7 00	....	....	
1847	Paterson	N. J.	125,000	25	3	Do.	20,000	3 50	95	....	
1850	Pawtucket	R. I.	75,000	50	4	Do.	12,000	3 00	....	....	Surplus $10,000, May 15, 1863.
1855	Peekskill	N. Y.	81,000	50	3	June & December.	4,000	4 00	....	....	Works leased to Gilbert T. Sutton.
1860	Penn Yan	N. Y.	12,000	50	5	Do.	3,000	4 00	....	....	
1859	Peoples', Chicago	Ill.	500,000	50	New	Do.	100,000	2 50	....	....	What is this Company doing?
1855	Peoria	Ill.	100,000	50	4	Do.	8,000	3 50	....	....	
1852	Petersburg	Va.	120,000	—	5	January & July.	20,000	3 80	....	....	
1841	Philadelphia	Pa.	3,000,000	50	—	City Works.	650,000	2 50	....	....	
1855	Piqua	O.	50,000	50	—	January & July.	6,500	4 00	....	....	
1835	Pittsburg	Pa.	300,000	100	5	Do.	60,000	1 50	115	....	
1854	Pittsfield	Mass.	50,000	100	5	Do.	4,500	4 00	....	....	
1858	Placerville	Cal.	30,000	50	—	Do.	4,500	10 00	....	....	
1860	Plainfield	N. J.	25,000	50	—	Do.	2,500	4 00	....	....	
1859	Plattsburg	N. Y.	16,000	50	—	January & July.	5,000	7 00	....	....	
1858	Plymouth	Mass.	40,000	100	—	April & October.	8,000	4 00	....	....	
1860	Port Chester	N. Y.	50,000	50	—	Do.	4,000	4 00	....	....	
1860	Port Jervis	N. Y.	20,000	100	—	Do.	3,000	4 10	....	....	
1849	Portland	Me.	300,000	50	4	January & July.	30,000	3 00	....	....	
1859	Portland	Oreg.	50,000	50	—	Do.	3,500	8 00	....	....	
1859	Port Lavacca	Texas.	50,000	100	—	Do.	2,500	7 00	....	....	
1851	Portsmouth	N. H.	70,000	100	8	April & October.	6,500	3 70	....	....	
1855	Portsmouth	O.	50,000	50	4	January & July.	10,000	3 50	....	....	
1855	Portsmouth	Va.	100,000	50	4	Do.	4,000	4 00	....	....	
1856	Pottstown	Pa.	20,000	50	3	Do.	3,500	4 00	....	....	
1850	Pottsville	Pa.	110,000	50	2	Do.	10,000	3 50	....	....	
1850	Poughkeepsie	N. Y.	84,000	25	4	March & September.	15,000	3 50	120	110	
1848	Providence	R. I.	1,000,000	50	4	January & July.	60,000	3 00	122	....	
1858	Quincy	Ill.	300,000	50	4	June & December.	12,000	3 50	....	....	
	Quincy	Mass.	00,000	00	—	Do.	00,0 0	0 00	....	....	
1855	Racine	Wis.	43,500	26	—	Do.	7,000	3 50	....	....	
1857	Rahway	N. J.	50,000	20	—	January & July.	5,000	4 00	....	....	
1858	Raleigh	N. C.	25,000	100	6	May & Novrmber.	5,000	6 00	....	....	
1848	Reading	Pa.	100,000	25	4	January & July.	25,000	3 00	....	....	
1851	Richmond	Va.	341.975	—	—	City Works.	30,000	3 00	....	....	
1859	Richmond	Mass.	40,000	25	—	January & July.	3,000	4 00	....	....	Jeff. Davis has extinguished the gas-lights of Richmond, Va.
	Richmond County	N. Y.									
1859	Ripley	O.	25,000	50	—	April & October.	2,000	4 00	....	....	
1852	Rochester	N. Y.	200,000	50	5	January & July.	50,000	2 50	....	....	
1857	Rockford	Ill.	40,000	50	—	Do.	4,000	4 00	....	....	
1854	Rock Island	Ill.	100,000	50	—	Do.	6,000	4 50	....	....	
1854	Rockland	Me.	50,000	100	—	Do.	6,000	4 40	....	....	
1852	Rome	N. Y.	85,000	100	3½	Do.	10,000	3 60	....	....	
1854	Rondout and Kingston	N. Y.	65,150	20	3½	June & December.	10,000	3 80	....	....	
1854	Roxbury	Mass.	150,000	100	5	January & July.	20,000	3 50	....	....	
1859	Rutland	Vt.	20,000	25	—	Do.	4,000	3 50	....	....	
	Saco	Me.	71,600	100	3½	April & October.	8,000	4 00	....	....	
1857	Sacramento	Cal.	500,000	100	—	Do.	40,000	10 00	....	....	
1859	Sag Harbor	N. Y.	20,000	—	—	Do.	4,000	4 00	....	....	
1858	Saint Albans	Vt.	15,000	20	—	Do.	3,000	7 00	....	....	
	Saint Johnsbury	Vt.	30,000	25	—	Do.	4,000	4 00	....	....	
1857	Saint Joseph	Mo.	50,000	100	5	January & July.	6,000	5 00	....	....	
1859	Saint Louis	Mo.	600,000	50	—	June & December.	180,000	3 50	....	....	
1857	Saint Paul	Min.	200,000	50	3	January & July.	10,000	6 00	....	....	Surplus $10,000, May 15, 1863.
1856	Salem	N. J.	30,000	25	3	Do.	5,000	3 86	....	....	
1850	Salem	Mass.	200,000	100	4	February & August.	30,000	3 24	....	....	
1859	Salem	O.	25,000	20	—	Do.	3,000	3 00	....	....	
1859	Salisbury	N. C.	14,600	50	6	May & November.	3,500	6 00	....	....	
	Salisbury Mills	Mass.	1,250	25	—	Do.	3,000	4 00	....	....	
	Salmon Falls	Me.	25,000	100	—	Do.	3,000	4 00	....	....	
	San Antonio	Texas.	75,000	20	—	Do.	40,000	6 00	....	....	
1854	Sandusky	O.	75,000	50	—	April & October.	9,000	3 00	....	....	
1859	Sandwich	Mass.	10,000	—	—	Private Works.	2,000	3 50	....	....	
1852	San Francisco	Cal.	2,000,000	100	4½	Do.	100,000	6 50	100	....	
	San Jose	Cal.							....	....	
1858	Saratoga Springs	N. Y.	39,000	100	—	January & July.	6,000	3 60	70	....	
	Saugerties	N. Y.	30,000	20	—	Do.	4,000	3 00	....	....	
1849	Savannah	Ga.	200,000	25	5	Do.	10,000	3 75	....	....	
1851	Schenectady	N. Y.	50,000	—	—	Private Works.	11,000	4 00	....	....	
1858	Scranton, Gas and Water	Pa.	100,000	25	—	January & July.	6,000	3 80	....	....	About trying Water-Gas.
1857	Selma	Ala.	20,000	100	—	Do.	2,000	5 00	....	....	
1856	Seneca Falls and Waterloo	N. Y.	80,000	50	3	Do.	10,000	4 00	100	....	
	Shreveport	La.	40,000	25	—	Do.	3,000	0 50	....	....	
1856	Sing Sing	N. Y.	40,000	100	—	Do.	3,000	3 50	....	....	
	Smyrna	Del.						4 00	....	....	Petroleum Gas.
1860	South Adams	Mass.	10,000	25	—	Do.	3,000	4 00	....	....	
1859	South Bridge	Mass.	5,000	25	—	Do.	4,010	6 00	....	....	
	South Boston	Mass.	200,000	50	—	Do.	60,000	3 25	110	....	
	Springfield	O.	200,000	100	—	Do	20,000	3 50	....	....	
1854	Springfield	Ill.	75,000	50	—	January & July.	10,000	3 50	....	....	
1848	Springfield	Mass.	100,000	500	5	February & August.	10,000	3 60	140	....	
1858	Stamford	Ct.	6,250	25	5	April & October.	3,000	3 50	....	....	
1857	Staten Island	N. Y.	150,000	50	5	January & July.	26,000	4 00	95	....	

GAS-LIGHT COMPANIES IN THE UNITED STATES.—Continued.

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. per Sh. $	Semi-An'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1859	Staunton	Va.	18,000	50	6	January & July.	4,000	7 00	....	....	
	Steubenville	O.	150,000	100	—	Do.	15,000	4 00	....	....	
	Stockton	Cal.	50,000	—	—	Do.	8,000	10 00	....	....	
1848	Syracuse	N. Y.	125,000	25	5	March & September.	25,000	3 00	112	....	
	Tamaqua	Pa.	40,000	25	—	Do.	3,000	4 00	....	....	
1859	Tarrytown and Irvington	N. Y.	70,000	50	—	January & July.	3,000	4 00	....	....	
1853	Taunton	Mass.	100,000	50	4	Do.	10,000	4 00	....	....	
	Terre Haute	Ind.	100,000	100	—	Do.	3,000	4 00	....	....	
	Thompsonville	Ct.	25,000	50	—	Do.	4,000	4 50	....	....	
	Tiffin	O.	25,000	20	—	Do.	4,000	4 00	....	....	
1853	Toledo	O.	100,000	50	3	Do.	8,000	3 50	....	....	
1847	Trenton	N. J.	100,000	20	4	Do.	15,000	3 42	....	110	
1848	Troy	N. Y.	200,000	100	4	June & December.	35,000	3 00	160	....	
1856	Urbana	O.	30,000	25	—	April & October.	3,500	4 00	....	....	
1849	Utica	N. Y.	80,000	100	4	Do.	22,000	3 60	....	....	
1853	Vicksburg	Miss.	66,000	50	—	March & September.	4,000	4 50	....	....	
1859	Vincennes	Ind.	25,000	100	—	January & July.	2,000	4 00	....	....	
1863	Virginia City	N. T.					20,000				
1858	Walden	N. Y.	2,500	—	—	Private Works.	1,000	6 00	....	....	
1853	Waltham	Mass.	100,000	100	4	January & July.	3,000	4 00	....	....	
1857	Ware	Mass.	30,000	20	—	Do.	3,500	4 00	....	....	
1861	Warren	O.	30,000	50	—	Do.	4,000	3 00	....	....	
1854	Warren	R. I.	20,000	25	—	Do.	3,000	4 00	....	....	
1855	Washington	D. C.	500,000	20	5	Do.	50,000	2 61	....	100	
1859	Washington	N. C.	15,000	100	—	April & October.	1,500	6 00	....	....	
1848	Washington	Pa.	20,000	25	4	January & July.	4,000	3 00	....	....	
1854	Waterbury	Ct.	100,000	25	—	Do.	4,000	4 00	....	....	
1852	Waterford	N. Y.	12,000	25	—	Do.	4,000	4 00	....	....	
1852	Watertown	N. Y.	20,000	100	—	Do.	10,000	7 00	....	....	
1856	Watertown	Wis.	25,000	100	—	Do.	5,000	5 00	....	....	
1858	Wautoma	Wis.	30,000	50	—	Do.	3,000	4 50	....	....	
1857	Waverly	Miss.	20,000	100	—	April & October.	4,000	5 00	....	....	
1854	West Cambridge	Mass.	60,000	100	—	February & August.	10,000	4 00	....	....	
1852	Westchester	Pa.	100,000	25	2½	Do.	3,500	3 50	....	....	
	Westfield	Mass.	25,000	100	6	Do.	4,000	4 00	....	....	
	Weston	O.	20,000	25	—	Do.		5 00	....	....	
1857	West Point	N. Y.	50,000	—	—	United States Military	Academy.	2 00	....	....	
1853	West Troy	N. Y.	100,000	50	3	January & July.	10,000	3 60	85	....	
1850	Wheeling	Va.	75,000	25	6	Do.	12,000	2 70	....	....	
	White Plains	N. Y.	20,000	20	—	Do.			....	....	
1856	Wilkesbarre	Pa.	50,000	50	—	May & November.	4,000	3 33	100	80	
1850	Williamsburg	N. Y.	1,000,000	50	5	January & July.	60,000	3 00	....	....	
1858	Williamsburg	Va.	30,000	25	—	Do.	3,000	4 00	....	....	Camp-fires of the Union Army light up this place at present.
1857	Williamsport	Pa.	70,000	25	4	Do.	3,500	3 80	....	....	
1859	Willimantic	Ct.	12,000	—	—	Do.	2,500	3 50	....	....	
1853	Wilmington	N. C.	60,000	50	5	Do.	8,000	5 00	....	....	
1852	Wilmington	Del.	200,000	50	5	February & August.	20,000	3 00	....	....	
1854	Winchester	Va.	36,000	50	6	January & July.	5,000	4 00	....	....	
1861	Windsor	Vt.	20,000	25		Do.	2,000	6 00			Make Petroleum Gas.
	Woburn	Mass.	20,000	—	—	Do.	3,000	4 00	....	....	
1856	Woodstock	Vt.	10,000	50	4	Do.	4,000	6 00	....	....	
1853	Woonsocket	R. I.	82,600	100	4	April & October.	4,000	3 50	....	....	
1856	Wooster	O.	25,000	50	—	January & July.	6,000	3 00	....	....	
1849	Worcester	Mass.	160,000	100	5	Do.	15,000	3 50	....	....	
1855	Xenia	O.	40,000	50	—	Do.	3,000	4 00	....	....	
1854	Yonkers	N. Y.	100,000	50	3½	Do.	10,000	3 50	110	104	
1849	York	Pa.	40,000	57	3	June & December.	10,000	3 50	....	....	
	Yorkville	S. C.	20,000	25	—	Do.	4,000	4 00	....	....	
1858	Ypsilanti	Mich.	20,000	50	5	February & August	6,000	14 00	....	....	
1850	Yreka	Cal.	30,000	100	—	Do.	2,000	0 00	....	....	
1848	Zanesville	O.	44,600	25	4	Do.	10,000	3 00	....	....	

GAS-LIGHT COMPANIES IN THE BRITISH PROVINCES OF NORTH AMERICA.

When Chartered.	Town.	Province	Chartered Capital.	Par Val. per Sh. $	Semi-An'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1854	Belleville	C. W.	33,040	100	4	January & July.	1,200	5 00	....	....	
1854	Brantford	C. W.	32,000	100	2½	Do.			....	....	
	Brockville	C. W.	50,000	—	—	Do.	5,000	4 00	....	....	
	Chatham	N. B.	50,000	—	—				....	....	
1854	Charlotte Town	P. E. I.	50,000	100	5	Do.	3,000	3 50	....	....	
1857	Cobourg	C. W.	30,000	—		February & August.	4,000		....	....	
	Dundas	C. W.	30,000	—	—	Do.	6,000	4 00	....	....	
	Frederick	N. B.	50,000	—	—	Do.			....	....	
1843	Halifax	N. S.	160,000	40	7	May.	30,000	3 00	....	....	
1850	Hamilton	C. W.	125,000	40	5	March & September.	20,000	3 50	....	....	
1848	Kingston	C. W.	80,000	100	—	Do.	6,000	3 50	....	....	
1853	London	C. W.	100,000	20	5	May & November.	5,000	5 00	....	....	
1847	Montreal	C. E.	400,000	40	—	March & September.	110,000	2 80	....	113	Last sale at this figure.
1854	Ottawa	C. W.	40,000	40	5	Do.	5,000	4 50	....	....	
1859	Point Levi	C. E.	25,000	25	—	January & July.	4,000	3 50	....	....	
1859	Port Hope	C. W.	28,000	20	4	May & November.	4,500	3 50	....	....	
1847	Quebec	C. E.	200,000	200	4	January & July.	60,000	3 00	....	....	
1848	Saint Catherine's	C. W.	80,000	20	—	May & November.	7,000	4 50	....	....	
1859	Saint Hyacinthe	C. E.	15,000	20	—	Do.	4,000	4 00	....	....	
	Saint John	N. B.	170,000	85	4	June & December.	25,000	3 00	110	110	Sales at this figure.
	Saint John's	N. F.	50,000	—	4	Do.	30,000		....	....	
1858	Sorel	C. E.	14,000	20	4	Do.	4,000	3 00	....	....	
1848	Toronto	C. W.	400,000	50	—		50,000	3 00	....	....	This Co. pay a quarterly div. of 2 per ct.

GAS-LIGHT COMPANIES IN CUBA, MEXICO, SOUTH AMERICA AND NEW ZEALAND.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. per Sh. $	Semi-An'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
	Callao	Chile.		—	—	January & July.	20,000	7 00	....	....	
	Cardenas	Cuba.	50,000	—	—	Do.	180,000	5 00	....	....	
1857	Compania Cubana	Hav'a.	500,000	500	10	Do.			....	....	
	Cienfugos	Cuba.		—	—	Do.	12,000	5 00	....	....	These four towns are lighted by the Compania Cubana of Havana.
	Guanabacoa	Cuba.		—	—	Do.	14,000	5 50	....	....	
	Regla	Cuba.		—	—	Do.	10,000	5 00	....	....	
	Trinidad	Cuba.		—	—	Do.	16,000	5 00	....	....	
	Guines	Cuba.		—	—	Do.			....	....	
	Guyaquil	S. A.	150,000	—	—	Do.	35,000		....	....	
	Havana	Cuba.	2,000,000	500	—	Quarterly.	200,000	5 00	....	175	
	Lima	Peru.	100,000	—	—	January & July.	150,000		....	....	
	Maranham (Chartered)			—	—	Do.			....	....	
	Matanzas	Cuba.	50,000	—	—	Do.	180,000	8 50	....	....	
	Mexico City	Mex.	550,000	—	—	Do.			....	....	
	Montevideo	S. A.	500,000	—	—	Do.			....	....	
	Para (Chartered)			—	—	Do.			....	....	
1854	Rio de Janeiro	S. A.	1,000,000	500	7½	Do.	300,000	4 00	....	....	
	San Iago	Chile.	500,000	—	—	Do.	180,000	7 00	....	....	
1857	Saint Jago de Cuba	Cuba.	450,000	500	—	Do.	25,000	5 00	....	....	
	Valparaiso	Chile.	500,000	—	—	Do.	85,000	6 00	....	....	
	Vera Cruz	Mex	500,000	—	—	Do.			....	....	
	Villa Clara	Cuba.	50,000	—	—	Do			....	....	
	Auckland	N. Z.		—	—	Do.			....	....	

REPORT OF THE INSPECTOR OF GAS OF BOSTON, MASS.

OFFICE OF GAS INSPECTOR,
Boston, March 2, 1864.

To the Honorable the Mayor and Aldermen of the City of Boston:

Gentlemen: In compliance with the request implied in your order of the 8th ult., communicated to me on the 12th, and in conformity with the law relating to the inspection of gas, which prescribes (sect. 10) that

"Whenever requested by the Mayor and Aldermen of any city, or the Selectmen of any town, the Inspector shall report to them whether the gas supplied in the respective city or town is of the legal standard, and also whether it is sufficiently well purified from sulphuretted hydrogen, ammonia, and carbonic acid,"—

I present the following report of the quality of the gas furnished by the Boston Gas-Light Company, as determined by observations made at the office of the Inspection, No. 313 Washington street, at various times during the past month.

The *illuminating power* of the gas, as tested by the Photometer, on a number of days within this period, furnishes an average value of 16.28 candles; that is, the amount of light produced by the gas, when consumed at the rate of 5 cubic feet per hour, in a standard Argand burner of 15 holes, and having a chimney 7 inches high, was equal, by a mean of the observations, to the light of 16.28 standard candles, each burning at the rate of 120 grains per hour. The lowest candle power observed was 14.85; the highest was 18.69; but with a shorter chimney, the former result was increased to more than 15 candles. It is proper to add that the minimum strength allowed by the law for merchantable gas is *twelve* candles.

As collateral evidence of the degree of illuminating power, the volume of heavy hydro-carbons determined by the use of Bromine in the absorption-tube, was found to range from 5.03 to 8.56 per cent., giving, as an average of all the observations, 6.68 per cent. of the total volume of the gas.

As to the impurities in the gas, it was found that the volume of *carbonic acid* varied from 1.41 to 3.32 per cent., making an average of 2.73 per cent. of the whole bulk, an amount sufficient to make the illuminating power sensibly less than it would have been in the absence of this ingredient. As coal-gas, in the act of burning, generates a very large volume of carbonic acid, in some cases even equalling the whole bulk of the gas consumed, the presence of this substance in small proportion, ready formed in the gas, cannot add materially to the contaminating effect of the combustion on the surrounding air.

Scarcely a trace of *ammonia* was at any time present in the gas, which, in this respect, maintained its customary purity.

In regard to *sulphuretted hydrogen* the results have been less favorable. For several days in the early half of the month, the indications of this impurity were more considerable than in any previous observation since the commencement of the Inspection. Since that time, however, the gas has returned to its usual almost entire exemption from this ingredient. As commonly happens, the sulphur contained in the gas was found to exist chiefly in the form of *bi-sulphuret of carbon*, the removal of which is still a problem in the purification of gas. The *whole amount of sulphur* contained in the gas, determined by burning a large volume in the presence of ammonia, was found to range from 6.44 to 6.77 grains in 100 cubic feet.

In the British inspection, 20 grains of sulphur to the 100 feet is the largest proportion allowed to merchantable gas, and, considering the really noxious character of this impurity, it is satisfactory to know that, even in its recent less purified condition, the Boston gas has fallen so much within this limit.

I have the honor to remain,
Your obedient servant,
WILLIAM B. ROGERS,
Late Inspector of Gas-Meters and Gas.

HONESDALE, PA.—A telegram in the daily papers of March 12th, says, that the "gas-house," at Honesdale, Pa., was blown up, and is a total loss. We have no further particulars of this calamity, except that two persons were seriously injured.

REPORTS OF GAS-LIGHT COMPANIES,

ST. LOUIS, MO.

Sixteenth Annual Report of the Directors, to the Stockholders of the St. Louis Gas-Light Company.

The directors of the St. Louis Gas-Light Company, in obedience to the requirements of section 18, of the charter, make to the stockholders the following statement of the affairs of that corporation, for the year ending November 30th, 1863.

For the year ending as above, the directors have the satisfaction of informing the stockholders that the works of the company, in all its branches and interests, are in good order and condition. The consumption of gas, as compared with last year, very materially increased; said increase being 10,649,882 cubic feet.

The board of directors, last spring, authorized its president to contract with Messrs. J. W. & J. F. Starr, of Camden, New Jersey, for a condenser, upon a plan highly recommended, and which is now being put up at the Station Works, and which will be completed about the first of January next, which cost $8,500, at the works in Camden, New Jersey.

The expense of putting it up, we cannot, at present, state, as it is not yet finished.

There has been no change in the number of public lamps during the last year, the whole number being 1,703; but by direction and agreement with the city, 53 of the above number are temporarily suspended, leaving 1,650 now lighted and used.

The report of the engineer and superintendent show the situation of the Station works, street mains, and meter and service accounts. These accounts have increased in the aggregate during the past year, as follows: increase of meters, 94; total amount, of meters now in use, 4,994. Increase of service, 89; increase of street mains, 1,043 feet 2 inches; making a total length of street mains of 53 miles 4,909 feet.

The amount of Pittsburg coal consumed the past year in the manufacture of gas, is 359,070 bushels. We have on hand at the present time, 134,493 bushels; sufficient to carry on the works until the first of April next. Owing to the failure of our coal contractor in delivering his coal according to contract, the company is compelled, at the present time, to use one-third Illinois coal in the manufacture of gas; all of which is a great detriment and loss to this company, which they hope to remedy soon.

Owing to a great increased demand for labor in almost every department of business, the expense of manufacturing gas has been largely increased; and yet we are happy to inform the stockholders, that we are still able to declare a five per cent. dividend, after setting aside two and a half per cent. for sinking fund, together with the payment of the United States tax; (which amounts in the past year to $13,463 68,) without any increased cost to consumers.

The sinking fund for bonds due July 1st, 1865, is now $115,608 99.

The total consumption of gas for the past year is, 113,079,332 cubic feet. The whole number of private consumers is 4,994, being an increase of 94 over last year. The public consumption of gas is, for the past year, 18,153,800 cubic feet, being a decrease from last year of 2,658,700 cubic feet. The present number of stockholders is 205, being an increase of 9 during the past year.

Within the last three months, all the meters that formerly were supplied with whiskey, to prevent their freezing, have been refilled with a patent fluid in its stead, called "Gengembre's Patent Fluid," which if it should answer the purpose claimed for it by the patentee, will be a great saving of expense to this company, as well as giving more general satisfaction to consumers.

For more particular information, we would refer you to the reports of engineer, inspector and superintendent, which accompany this report.

All of which is respectfully submitted.

J. D. COALTER,
OLIVER A. HART,
JOHN TILDEN,
} *Committee.*

ENGINEER'S SIXTEENTH ANNUAL REPORT.

To the President and Directors of the St. Louis Gas-Light Company:

Gentlemen,—In accordance with custom, your engineer respectfully presents for your consideration, the following statement of the condition and operation of the Station Works under his charge, for the year ending November 30th, 1863.

Station Works.

This department remains the same as at the last report, working satisfactorily, with no improvents or extensions of importanee to report—the works in the manufacturing department still being ample to furnish a much larger supply of gas than is at present demanded, except in the condensing department, which will shortly be supplied, as I am now putting up a new condenser.

The increase in the consumption of gas for the present year has been large, amounting to 10,549,882 cubic feet.

During the year, the amount of coal carbonized for gas-making, amounts to 27,289,320 lbs., or 359,070 bushles, of 75 lbs. to the bushel; the amount of gas made 113,949,761 cubic feet, being 4.23-100 cubic feet to every pound of coal used. The amount of lime used for purifying the above gas, 10,050 bushels. Amount of coke made during the year 535,716 bushels, and the amount used for all purposes at the works, 339,714 bushels; the amount sold, 196,002 bushels.

The greatest amount of gas sent from the works in 24 hours during the year, was 529,754 cubic feet, and the greatest amount made, was 484,000 feet.

Of the amount of gas consumed, 547,500 cubic feet was used at the Station Works, and 100,000 cubic feet at the offices and workshops of the company.

By referring to last year's report, you will see that at the close of the year I was working 62 retorts. This year, in consequence of having to use nearly one-third of Illinois coal, and also on account of the great increase in the consumption of gas, I am now working 90 retorts. During the year we have received 13 retorts, and have now on hand 20. Of fire brick, we have 3,000; and of tile and shields, 250.

For report of stock, tools, &c., see inventory and monthly reports. Respectfully submitted.

THOMAS PRATT, Engineer.

INSPECTOR'S REPORT.

For the Year ending November 30th, 1863.

To the President and Directors of the St. Louis Gas Light Company:

Gentlemen,—The table headed "Meters Set and Returned," shows an aggregate of 783 set, and 689 returned during the year; making an increase of 94, which, added to 9,000, (the number at the commencement of the year,) makes 4,994 meters now in use by consumers.

At the commencement of the year, the company had a stock of 927 serviceable meters on hand; 6 new meters have been received since, and 94 set above the number returned; leaving to be accounted for 839, of which 2 have been destroyed by fire, and 69 worn out; leaving on hand, November 30th, 768 serviceable meters.

During the year, 89 service-pipes were laid.

Street Mains Laid.

	Feet.	In.
Four inch pipe, along north side of Pine street, from a point about 65 feet west of Leffingwell Avenue, to east side of Ewing Avenue.	422	6
Three inch pipe, along east side Beaumont street, from south side Locust street, northward.....	620	8
Total.....	1043	2

Making a total length of 53 miles, 4909 feet of street mains.

Respectfully submitted, A. LARGUE, Inspector.

REPORT OF SUPERINTENDENT OF PUBLIC LAMPS.

To the President and Directors of the St. Louis Gas-Light Company:

Gentlemen,—You will find in the table headed "Lighting and Extinguishing," the changes that have taken place in the department of the public lamps, during the year 1863. There has been no increase in the number of public lamps; and those suspended by request of the Mayor are still in the same condition.

In my last report, I informed you, that I had fears of not being able to bring the expenditures inside of the receipts—which I find to be the case. Labor is increasing in price, so that I fear, in the coming year, if we do

not get more from the city for lighting, extinguishing, cleaning and repairing, there will be a large deficit in the department.

I have the same number of men employed as at the close of last year, viz: 35, (10 cleaners and 25 lighters,) at $40 and $10 per month respectively. The pay roll amounts to $746 17. Repectfully submitted.

C. E. DUNN, Supt. of Public Lamps.

STATION WORKS, STREET MAINS, PUBLIC LAMPS, METER AND SERVICE.

Street Mains.

Balance November 30, 1862		$305,503 47
Labor	$142 00	
Lead	79 80	
Packing Yarn	6 60	
		228 40
		$305,731 87
Pipe sold	46 90	
Laying Mains for sundry persons	112 50	
		159 40
		$305,572 47

Public Lamps

Balance November 30, 1862		$35,725 02
Lamps	237 00	
Hauling Lamp-posts	6 40	
		243 40
		$35,968 42
Lamp-posts sold		22 00
		$35,946 42

Meter and Service.

Balance November 30, 1862		$53,993 49
Labor	$706 65	
Tubing	839 48	
Meters	222 03	
Right to use Gengembre's Patent Fluid	200 00	
Calcium	225 95	
Lumber	70 51	
Freight and Hauling	116 49	
Whiskey Bbls. and Osnaburgs	11 50	
Castings, Nails and Iron-work	90 30	
		2,482 91
		$56,476 40
Services laid	$2,561 65	
Old Castings sold	25 15	
		2,586 80
		$53,889 60

Station Works.

Balance November 30, 1862		$333,083 38
Frame House on lot adjoining Station-works, bought of Matthias Steitz	300 00	
Stone-work for New Condensers	155 00	
Tools	9 00	
		464 00
		$333,547 38

Sinking Fund.

Balance November 30, 1862		$78,135 14
2½ per cent. of the earnings, May 31st, 1863	$15,000 00	
2½ per cent. of the earnings, November 30th, 1863	15,000 00	
Interest received	7,473 85	
		37,473 85
		$115,608 99

Real Estate.

Balance November 30, 1862		$112,743 33
Fees and costs in suits	891 00	
Printing brief	24 00	
		915 00
		$113,658 33

Lighting and Extinguishing.

	Lamps put up.	Suspended.	Replaced.	Glass broken.	Hours burned.	Extra hours burned.
1862—December	0	1	0	85	215⅛	13⅛
1863—January	0	0	0	157	210⅛	19⅛
February	0	0	0	115	206⅛	30⅛
March	0	0	1	169	187⅛	19⅛
April	0	0	0	140	166⅛	14⅛
May	0	1	0	186	146	4⅛
June	0	1	1	68	143⅛	13⅛
July	0	0	0	212	139⅛	6⅛
August	0	0	0	112	154⅛	10⅛
September	0	0	1	151	179	8⅛
October	0	0	1	110	209	15⅛
November	0	1	0	87	219⅛	19
Total	0	4	4	1,592	2,177⅛	176⅛

Present number Lamps	1,708
Suspended	58
Now burning	1,650

Meters Set and Returned.

	SET.											Serv. Laid	RETURNED.								
SIZES.	2	3	5	10	20	30	45	60	80	100	150	Total.		2	3	5	10	20	30	45	60	80	Total
1862—December	43	29	6	4	.	.	.	.	1	.	.	83	6	18	7	10	.	.	.	.	1	.	31
1863—January	20	29	9	3	.	.	.	.	.	.	.	61	1	20	23	4	3	1	1	.	.	.	52
February	11	23	8	2	.	.	.	.	.	.	.	44	1	15	10	3	2	.	.	.	.	.	39
March	20	17	6	.	.	.	.	.	.	.	.	43	6	44	26	5	1	.	.	.	.	.	86
April	26	26	9	1	.	.	.	.	.	.	.	62	12	16	22	4	1	.	.	.	.	.	43
May	8	15	4	2	.	.	.	.	.	.	.	29	5	52	80	17	3	.	.	.	.	.	152
June	26	17	8	2	.	.	.	.	.	.	.	53	9	35	43	19	3	2	.	.	.	.	102
July	15	19	3	1	.	1	.	.	.	.	.	39	4	9	12	6	2	1	1	.	.	.	31
August	25	39	8	3	2	1	.	.	.	.	.	69	9	21	24	7	5	1	1	.	1	.	60
September	32	34	11	2	1	1	.	.	.	.	.	81	11	8	12	6	1	1	1	.	.	.	29
October	51	56	17	6	3	1	.	.	.	1	1	136	10	9	15	3	2	2	1	2	.	.	34
November	30	36	8	5	3	1	.	.	.	.	.	83	15	5	15	3	1	5	1	.	.	.	30
Total	307	341	97	31	9	5	..	..	1	1	1	783	89	247	303	87	24	13	6	2	2	..	689

Coal, Gas, &c.

Date.	Coal Received.	Coal Used.	Lime Used.	Coke Used.	Coke Sold.	Tar Sold.	Gas Made.	Gas left the Works.	Gas Lost.	Public Lamps.	Burn'g of Public Lamps.	Gas consumed by Public Lamps.
	Bushels.	Bush's.	Bush'l	Bush's.	Bush's.	Brls.	Cubic Feet.	Cubic Feet.	Cubic Ft.	Ad.To'l	Hours.	Cubic Ft.
1860—November 30	871,151	.....	.....	.....	.....	.....	415,761	.....	.....	1,073	.....	.....
December	.....	37,280	1,150	33,424	21,803	479	11,891,000	11,626,329	2,494,000		215⅛	1,774,700
1863—January	.....	38,697	900	35,507	18,60-	470	11,577,000	11,505,661	1,958,000		210⅛	1,735,500
February	.....	31,217	750	31,000	17,827	433	9,622,000	9,627,560	979,000		206⅛	1,702,600
March	.....	31,280	750	31,005	15,787	412	9 675.000	9,637,703	2,173 000		187⅛	1,541,700
April	39,556	27,795	700	26,960	12,660	344	8,510,000	8,317,287	1,061,500		166⅛	1,508 700
May	63,950	23,294	650	23,080	12,804	321	7,858,000	7,762,140	1,803,800		146	1,203,800
June	2,198	19,927	450	16,681	13,239	348	6,857,000	6,860,292	1,194 400		143⅛	1,175.900
July	.....	21,151	600	19,996	12 28-	338	6,854,000	6,585,786	2,085.000		139⅛	1,151 500
August	.....	21,476	600	20,757	11,957	298⅛	7,874,000	8,180,934	3,145.000		154⅛	1,268,900
September	.....	26,116	750	23,461	15,718	347	8,537.000	8,389,464	1,545,000		179	1,495.800
October	.....	37.164	1,100	33,413	20,334	464	11,-29.000	11,680,928	3,057,000		209	1,724,200
November	16,708	43,673	1,650	44,430	23 040	518	12,950,000	12,905,258	2,012,900		219⅛	1,867,500
	493,568	359.070	10,050	339,714	196.002	4,672	118,949.761	118,079,332	28,508 100	1,073	2,177⅛	18,153,800

None added during the year.

Coal on hand Nov. 30th, 1863, 134,493 bushels.
Gas on hand, Nov. 30th, 1863, 870,430 cub. feet.

NOTE.—1,926 bushels Coal under the head "Used," in Dec., Jan'y, Feb'y and March, was SOLD.
16,708 bushels Coal under head of "Received," was inferior Coal.
647,500 cubic feet of Gas under the head of "LOST," was consumed at the Station Works, Offices, Workshops, and by the officers of the Company.

Statement showing the Annual Progress of the St. Louis Gas-Works, from their Commencement, in 1847, to 1863, inclusive.

Years. Nov. 30.	No. of Private Consumers.	No. of Private Burners.	Total Consumption of Gas.	No of Public Lamps.	Public Consumption of Gas.	Pipe Laid. Miles.	Ft.	In.	Stockholders.
1848	459	3,349	6,630,451	279	3,483,750	10	972	8	73
1849	789	5,572	13,301,482	358	3,786,651	14	63	6	87
1850	958	6,525	21,499,230	433	4,951,445	15	2,863	0	116
1851	1,362	9,540	28,256,046	678	6,885,063	24	1,798	0	151
1852	1,775	12,487	36,035,697	1,052	10,419,487	32	1,499	0	176
1853	2,191	15,509	42,942,222	1,107	11,739,775	34	1,505	0	182
1854	2,704	19,396	47,412,632	1,210	11,752,072	36	2,063	0	208
1855	3,096	22,938	51,929,242	1,350	14,105,530	41	153	0	215
1856	3,425	26,514	63,277,942	1,408	16,184,250	43	1,260	0	220
1857	3,857	31,829	74,616,472	1,522	17,208,200	45	3,354	0	215
1858	4,385	37,078	88,961,724	1,540	17,891,001	46	1,487	0	203
1859	5,091	44,684	102,145,920	1,568	19,105,000	47	5,012	4	203
1860	5,764	52,857	113,605,240	1,692	19,161,989	53	527	10	199
1861	5,864	.....	105,005,912	1,703	20,393,900	53	3,267	10	199
1862	4,900	.....	102,529,450	1,703	20,812,500	53	3,865	10	196
1863	4,994	.....	113,079,332	1,703	18,153,800	53	4,909	0	205

OFFICERS OF THE ST. LOUIS GAS-LIGHT COMPANY FOR THE YEAR 1864.

Directors.

ASA WILGUS, EBEN RICHARDS, Sr.
R. J. LOCKWOOD, JOHN D. COALTER,
BENJAMIN STICKNEY, OLIVER A. HART,
CHARLES H. PECK, JAMES SMITH,
JOHN TILDEN.

ASA WILGUS, President. OLIVER A. HART, Vice Pres't
W. A. KINGDON, Secretary. W. W. BRANSON, Ass't Sec.
THOMAS PRATT, Sup't. ALEXANDER LARGUE, Insp'r.
C. E. DUNN, Sup. Pub. Lamps.

GAS STEALING IN ENGLAND.

On March 1st, Charles and James Dobbins, brothers, were indicted for having stolen, on several occasions, 30,000 cubic feet of gas belonging to the Imperial and London Gas-Light Companies of London. The prisoners were gas-fitters, and, in 1849, had gas supplied to their premises by the Imperial Gas-Light Company. In 1857, the London Gas Company, the prosecutors in the case, got possession of the district, by exchange, and continued to supply the prisoners with gas up to the end of last year. At that time, an inspector, prompted by something he had heard, went to the premises and found five burners lighted. He went to the meter and turned off the gas, when the two lights burning in the house went out, but the other three in the workshop continued to burn as brilliantly as ever. The meter was then taken down, but the gas still continued to burn, when the inspector said he must break the ground. On doing so, he found gas coming in through the service pipe, and from that pipe there was another pipe, carrying the gas into the workshop. It appeared that the gas had been burned in the most reckless manner. From the meter there were seven gas-lights supplied, but there were altogether fifteen burners supplied through the spurious pipe, and these burners were kept lighted all night in the workshop, to keep it warm. It was estimated, that the value of the gas thus stolen, was $100 to $150 per annum, while the burners supplied by the meter consumed only about $20 per annum. The prisoners were convicted and sentenced to twelve months' imprisonment at hard labor.

GAS LEGISLATION.—In the New York Legislature Mr. Pinckney recently introduced a bill providing that it shall not be lawful for any gas company in this State to remove or cause to be removed any gas-meter from the premises of any consumer of gas, or disconnect the service-pipe from the main, except as provided for as follows:

No charge shall be made for the use of a meter to gas consumers by any gas company in this State, and all shall be deemed the property of the company which furnishes it, to be held in trust by the gas consumer, and can be removed upon the return by the proper officer that an execution for the collection of a judgment for gas furnished has been returned unsatisfied.

GAS EXPLOSION IN ENGLAND.—At Bicester, England, on February 24th, an explosion took place at the gas-works, by which the consumers were left in total darkness for one night. Some of the condensing tubes at the back of the retorts, had become choked up, preventing the gas from passing through, and the result wos an explosion, which fortunately, did not do much damage.

ANOTHER GAS EXPLOSION.—On the evening of the 19th ult., an explosion of gas took place at the officers' quarters of the Carbineers, situate in the South Cavalry Barracks, at Aldershott, England. It appears that for some days men had been engaged in repairing the water-pipes close to the gas-meter in the entrance to the officers' mess-house, and while doing so had damaged one of the gas-pipes and caused a large escape of gas. This appears to have commenced as early as half-past four, and, owing to some negligence, to have continued till twenty minutes of six. At this time a report took place. It blew up the central staircase, and scattered the fragments to a distance of 100 yards. At the same time nearly every window in the block of buildings in which the mess-house was situated was broken. Fortunately, although many persons were in the immediate vicinity, only one was seriously injured.

THE AMERICAN GAS-LIGHT JOURNAL is published on the 1st and 15th of every month, and is the recognized official organ of

LIGHT, HEAT, WATER-SUPPLY AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of LIGHT, and promote thereby the interests of companies and consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities, and to improve the system of SEWERAGE, VENTILATION, HEATING, and DRAINAGE everywhere.

THERE ARE 20,000 CITIES AND TOWNS IN THE UNITED STATES, CAPABLE OF SUPPORTING GAS-WORKS, WHILE THERE ARE NOT 400 GAS-WORKS IN OPERATION IN THE WHOLE COUNTRY!!!

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C. ELTON BUCK,

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THE

AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 1ST AND 15TH OF EVERY MONTH.

C. ELTON BUCK, ... EDITOR.

FRIDAY, APRIL 1, 1864.

Since the occurrence of the accident on board the ship *Lotty Sleigh*, which was refered to in a recent number of the JOURNAL, a large share of attention has been attracted to the subject of dangerous coal oils. This attention has been more marked in England than here, owing to the proximity to the scene of the accident, and also to the fact that several minor explosions of kerosene lamps have taken place in various parts of that country. The question has again arisen—what is the standard of safety? or, in other words, what degree of temperature is sufficient to cause safe oils to give off inflammable and explosive vapors? Mr. JAMES YOUNG, the leading manufacturer of coal oil in the world, has written a letter to the London *Times*, in which he recommends the following test by Mr. TEGETMEIR.

"Take an earthenware dish, holding about half a pint (a breakfast cup will do), fill the cup full from a kettle of boiling water, pour this into an earthenware quart jug, then fill the same cup again with boiling water from the kettle, and pour it also into the quart jug, then fill the cup with cold water, put it into the jug, shake the jug, to mix the hot and cold water, then pour the tepid water from the jug into the cup till the cup is half full, then pour about a tablespoonful of the oil to be tested on the tepid water in the cup, take the oil-can with the oil out of the room, then touch the surface of the oil in the cup with a lighted splinter of wood, or a match without sulphur. If the match causes a flash of flame to appear on the surface of the oil, the oil is below the standard of safety, and should not be used; if no flame appears, the oil is up to the standard. I may mention that in this trial no time should be lost after pouring the boiling water from the kettle, as the water may get too cold, but the whole may be gone through in from two to three minutes. It is well to have a saucer at hand, and if the oil should be a bad oil and ignite with the match, place the saucer on the mouth of the cup and the flame is extinguished. This trial should be done in daylight, and at a distance from a fire, and the directions must be followed exactly in the order, as given above."

Our experience leads us to pronounce this test quite clumsy and indefinite. The results may vary in different experiments, and the conclusions reached may be quite at variance. The standard of safety now universally adopted, was first pointed out in the columns of this JOURNAL, having been communicated to us by JOSHUA MERRILL, Esq., superintendent of the Downer Kerosene Oil works, of Boston, Mass. This test is simply to heat the oil in a water-bath to the temperature ranging from 120° to 130° Fahr. If the oil is safe it will bear the lower of these temperatures without igniting. Some oils will ignite at temperatures as low as 80° or 90°. These are extremely unsafe, and it is a fact to be dreaded, that much of this explosive stuff is now sold and used in lamps.

Several instruments have been devised for testing the inflammability of kerosene oils. The principle adopted is essentially that we have above described. The "pyrometer" of Mr. JOHN TAGLIABUE of this city, is better adapted for the purpose than any we have seen, and is more correct in principle than any others which have comeu nder our notice.

The London *Ironmonger*, a valued exchange, in treating of this subject, and alluding to the letter of Mr. YOUNG in the *Times*, says:

"In the same number of the *Times* appeared a letter with the signature 'Y,' which is the well-known mark of a high scientific metallurgical celebrity, who prefers signing his ultimate instead of his initial letter. 'Y' suggests that the inflaming point or standard of safety should be raised even higher than 130°; but, as no accidents have ever been traced to oils having an inflaming point several degrees below 130°, and as raising the point above that degree would, by increasing the price, lessen materially their economic use, there appears no valid reason for adopting his suggestion. Shortly after this discussion, a paper was read before the Association of the Medical Officers of Health, in which was shown that these accidents had invariably resulted from the employment of lamp oils capable of igniting at a very low temperature—in many cases even below the standard of the Petroleum Act—one severe accident being traced to the employment of an oil giving off inflammable vapor at a temperature below the freezing point of water. The author of the paper exhibited the practical mode of detecting dangerous oils, described in the former part of this article. In the conversation that ensued, Drs. Letheby, Lankester, R. D. Thompson, and the other members took part, and the desirability of raising the standard of the Petroleum Act from 100° Fahrenheit to 125°, was discussed; many accidents, some of a fatal character, having arisen from the employment of oils having a higher inflaming point than 100°."

We think the "desirability of raising the standard of the Petroleum Act from 100° Farenheit to 125°" needs something more than mere "discussion." In view of the accidents which have recently occurred, *action* is wanted as well as discussion. We trust that the learned *savants* comprising the association will agitate the subject until some practical result is accomplished, and a more secure standard adopted.

The *Ironmonger* closes its article with a reference to the dangerous naphthalizing schemes which seem to abound in England. The iron-plated frigate *Warrior* is lighted by one of these naphthalizing machines, which produces a vapor mis-called "ozone gas." We quote as follows, endorsing every opinion ventured by our contemporary:

"This liquid, which gives off large quantities of vapor at the ordinary temperature of the atmosphere, is employed by transmitting a current of air through it, and the combined air and vapor are burnt in the same manner as ordinary gas, the whole arrangement being a mere reproduction of Mansfield's dangerous and unpractical process. As the liquid boils at a temperature below that of many warm climates, the extreme danger of its employment is evident. It is one striking evidence of the inconsistency of the official character, that, after passing the petroleum bill, which enacts that not more than 40 gallons of any petroleum product having a lower inflaming point than 100°, shall be kept in any dwelling-house without a license, the government should allow the introduction of an apparatus on board the *Warrior*, which requires for its continued employment a very large quantity of the most volatile and dangerous petroleum products that can be produced—products which are inflammable even below 32°"

BURSTING OF THE SHEFFIELD RESERVOIR.

Recent arrivals of steamers from Europe have brought intelligence of the most distressing kind. At Sheffield, England, the great reservoir of the Sheffield Water Company, which held more than one hundred and fourteen thousand cubic feet of water, burst its embankment, and swept down a narrow gorge formed by the Loxley and Stannington Hills, into Sheffield itself. Without a moment's warning, this great deluge swept on, carrying destruction and death in its course; sweeping away farms, houses, mills and factories, and engulphing everything in its path. The number of human lives lost by this catastrophe is more than two hundred, while the value of property destroyed will amount to millions of dollars. The devastation of farms with their growing crops, orchards, the destruction of cattle and other live stock, and the entire demolition of hundreds of buildings, have carried dismay into the community, and, where once was seen a thickly populated district, teeming with thriving homes, and busy with the pursuits of industry, nothing is now left but a barren waste. The London *Times*, alluding to this calamity, remarks, that "the devastation is unparalleled. A large, populous and thriving district has been almost obliterated from the earth, scarce more than traces of the houses and factories that once stood there now remaining. The Don, owing to heavy rains, was unusually high, and the additional water thrown into it has laid hundreds of acres under water, and inflicted incalculable injury to the growing crops. Of the destructive character of the flood, there were abundant evidences on every hand. Timber in large quantities, bed posts, feather beds, tables, clocks, and various kinds of household furniture, passed down, and several carcasses of cattle also."

The immensity of the damage done by this accident, can be readily appreciated. A large bulk of water suddenly loosened from confinement, exerts a terrible force, and will sweep everything before it. The spring freshets which frequently occur in different parts of this country, afford an illustration of the mighty power of a flood of water. The solid masonry which these deluges have swept away like chaff; the bridges, and canals and railroads which they have obliterated, afford a sufficient proof of the power exerted, which may safely be said to be unlimited.

The reservoir at Sheffield, covered an area of seventy-six acres. The height of the embankment which was built across the valley, was eighty-five feet, and its thickness was forty feet. It was three hundred yards long. When this embankment gave way, the water swept on for fourteen miles, destroying everything in its course. At Neepsend, nine hundred acres of gardens were entirely destroyed. Altogether, this catastrophe is one of the most fearful in the annals of history, and the ruin and death which it has wrought will indelibly fix it in the memory of the people.

In this connection it may not be inappropriate to ask whether the reservoirs of water companies in this country are as firmly built as they might be. In some of our large cities, these immense ponds are so situate that a sudden bursting of their embankments would wreak ruin far and wide. Take the Croton reservoir in Fifth Avenue, in this city, for example. Although the extent of ground covered by this receptacle is by no means as large as the one at Sheffield, yet, were the water it contains to burst its barriers, what immense damage it might do! Situated as it is, in the midst of the most fashionable and elegant part of the city, in the event of an accident such as has attracted our notice, the amount of property it would ruin is beyond compute. But we have no fears of this. The massive solidity of the structure, and the known care which has characterized the Croton Aqueduct Board in all of their constructions, is a sufficient guaranty that the reservoir referred to is strong enough to bear all the pressure which may be broughl to bear upon it.

SITUATION WANTED.—We again call attention to the advertisement in another column, of a book-keeper, who wants a situation in a gas-works. The applicant has had large experience, and is highly recommended.

ANSWERS TO CORRESPONDENTS.

O. E. T., of Pa.—*We have not seen the drawings, nor have we heard of the organization of the company. Would like to be advised of the result of the negotiation.*

A. B. B., of Mass.—*From the description you give of the apparatus, it must be attended with much danger. There is really no novelty in the principle. It does not generate gas, but by the vaporization of the hydrocarbon, atmospheric air is saturated with the vapor, which burns and, no doubt, gives a good light. We would advise you to have nothing to do with it.*

G. E. F., of Md.—*The pamphlet was duly received, for which accept our thanks. The information it contains is very interesting.*

E. E., of Ill.—*The trouble must be owing to the sulphur in the coal. It would be well for you to ascertain its exact percentage. A more liberal use of lime would perhaps remedy the evil complained of.*

I. S. T., of Pa.—*The Canada oil wells have nearly all given out, but the yield of the Pennsylvania oil seems to be in no way diminished.*

S. & E., of Vt.—*Your plan is a good one, and there are strong prospects of its being successful. We think the principle is patentable, as it seems to possess considerable novelty. We should advise you to make immediate application for a patent, or at least to file a caveat.*

P. P. of N. Y.—*The bill has not yet passed the Legislature, although its friends are very sanguine of its ultimate passage. It will be strongly opposed.*

CORRESPONDENCE.

The Matanzas and Villa Clara Gas-Works of Cuba.

Guines, Cuba, March 5, 1864.

To the Editor of the American Gas-Light Journal:

Having a few moments unoccupied, I will devote them to giving you a few items respecting the Matanzas and Villa Clara gas companies. But before doing so I must complain that copies of the *Journal* for last month have not made their appearance. I had much rather go without my roasted banana for breakfast, than to miss your paper, so you will please see that they reach me regularly, and if the fault is in the Post-Office, complain roundly of their negligence.

In order to furnish you with the following particulars, your own correspondent, in company with a friend, took a trip to Matanzas, and a good time we had of it. We found the *administrador* a very agreeable and intelligent gentleman, and he took much trouble to show us over the works, which are built, Spanish like, in the most solid and durable manner. The *administrador* is an inventive genius, and we saw many things there which are not laid down in Clegg, especially a very ingenious mode of setting the retorts. He informed me that they were making 1,600,000 cubic feet of gas monthly; that there are 363 public lamps—a very small number by the way, for Matanzas—with 1,200 consumers. They divide about 15 per cent. The capital stock is $300,000. The shares bear a value of 21 per cent. premium in the market, and the company declare a dividend every three months. Price of gas $5 per thousand cubic feet. The population of Matanzas is about 38,000. There are in operation 23 retorts, all iron. Most, if not all the work of making gas is done by Chinamen, of whom there are 25 in the employ of the company. The gas-holder is of 80,000 cubic feet capacity, and there is another being built, of equal dimensions. I observed an Erricson engine in operation, for pumping water. Take them altogether, the Mantanzas gas-works are well managed, and they pay handsomely, which is entirely owing to the able management of its *administrador*, Don Ygnacio de Arellano.

The *administrador* of the Villa Clara gas-works has kindly furnished me with the following details respecting their operations:

The works have been in operation about five years, and were built by Merrick & Sons, of Philadelphia. The gas-holder is of 17,000 cubic feet capacity. There are 18 retorts, of which only 9 are in use. The capital stock was at first $60,000, which has been increased to $200,000. The works belong to a society called "*Credito Territorial Cubana.*" There are 300 public lamps, and 672 consumers. The product of the works is about 720,000 cubic feet monthly, and the population of the town is about 11,000. As this town is situated some 50 miles inland, making the coal very expensive, they tried the experiment of using the bituminous coal (*chapapote*) of the Island, but with very bad results. It was found impossible to purify the gas sufficiently, and the pipes filled up. They still, however, use a small quantity mixed with the English coal. By the way, how is it that some of your wise ones have not experimented on this *chapapote*? It is exceedingly rich in gas material, but difficult to purify. It is exceedingly abundant, and I offer to send a small quantity to any gas chemist who wishes to prove its qualities. W.

LEAD IN HYDRANT WATER.

BY PROF. W. E. A. AIKIN.

Among all the dangers arising from carelessness, the public may not be aware that there is great danger in the careless use of even hydrant water. That water, impregnated with any preparation of lead, cannot be safely used for culinary purposes, even in cases where the lead is present in too small proportion to produce any immediate injury, is well known. Lead, like some other poisonous agents, when taken in minute successive doses, will remain in the system apparently inactive, until a certain amount accumulates; then, suddenly, a series of alarming symptoms will supervene, often resulting in death. An occurrence of this kind was recently brought to my notice by one of my professional friends, who was called upon to prescribe for several members of the same family, all apparently suffering from the peculiar action of lead. In one of the cases, the result was fatal—the others, after much suffering, slowly recovering. A portion of the water supposed to have been instrumental in producing the difficulty was brought to me for examination, and, carefully analyzed, was found to contain lead in the proportion of 0.028 gr. to the gallon of water. This very minute quantity, very little exceeding the 0.001 gr. to an ordinary tumbler full of water, taken at intervals, somewhat regularly, seems to have accumulated until the poisonous action of the metal was developed. The whole difficulty seems to have arisen from the occasional use of water taken from a hydrant stop that was not in regular and frequent use. The water in a portion of the lead pipe being thus allowed long continued contact with the metal in the immediate vicinity of the stop. The simple precaution hereby indicated, and one that cannot be neglected with safety, is to allow the first discharge of water from any hydrant stop to run to waste, and not to collect any for culinary purposes until we are sure that all the previously stagnant water in the lead pipe has wholly escaped. And it would be better, in general, to resort to the yard hydrant for water required for drinking or preparing food—the lesser length of lead pipe there in use diminishing the danger. But even there the water first discharged in the morning should be thrown away.

The preceding article having caused some alarm, by request of a friend on the Water Board, I sent the following article, as a letter to one of the Commissioners, sometime after the other appeared:

To Ewen T. Elliott, Esq.,

Board of Water Commissioners, Baltimore, Md.:

Dear Sir,—A recent fatal case of lead poisoning, arising from the use of hydrant water that had been left standing for a long time in the lead pipe, appears to have given rise to much unnecessary alarm. In 1848, in reply to an inqiury by Prof. Horsford, of Cambridge, I stated that after inquiry among my medical friends, I could not hear of a single case of lead poisoning that could be traced to the use of hydrant water during the thirteen years preceding. Such cases may have occurred of late, though I have no evidence to that effect, except in the one case noted. The extreme delicacy of the tests for lead enabling one to detect it even when dissolved in 100,000 times its weight of pure water, added to the fact that in all my examinations of our hydrant water (with one exception), I have never been able to detect the slightest trace of that metal, even with water concentrated to the one hundredth of its original volume, ought to suffice to relieve all apprehension of danger from that source. If there should be one part of lead in 10,000,000 parts of water, it could be made manifest in the concentrated liquid. Our water, at present, contains less solid matter in solution to the gallon, and it to that extent purer than in former years, when obtained from a point lower down the stream. While the solid matter, consisting principally of sulphate and carbonate of lime, exerts that peculiar action on the surface of the lead which results in speedily covering it with an insoluble protecting coat, and arresting in general all further action. The introduction of lead into the system is not necessarily followed by dangerous or even unpleasant consequences. The human system, by its power of elemination, disposes daily of infinitessimally small quantities of various matters that if allowed to accumulate would destroy life. The maximum quantity of lead that can be taken daily without danger, is an interesting question to which at present no anewer can be given. We may say, in general, that if the quantity ingested is too great for the eliminating power of the system to dispose of it, an accumulation will begin and go on until the peculiar action of the poison is suddenly developed. It has been thought safe to use water holding 0.025 gr. of lead to the gallon; but cases of lead paralysis have been traced to the use of water containing only 0.010 gr. to the gallon. The fatal case previously referred to, was consequent upon the use of water holding only 0.028 gr. Prof. Horsford, many years since, made an approximate arithmetrical computation to determine the period required to supply to the human system, by the ordinary use of hydrant water, in Boston, on amount of lead capable of destroying life. Assuming the quantity of lead in solution to be equal to that actually present in water from another source, in daily use, after it had been standing 36 hours in the pipe, he showed that if this quantity was supposed to be doubled, the consumer of such water should die of lead poison at the expiration of 1,732 years. But if the lead present was increased tenfold, then the sufferer would live only 346 years. It should be borne in mind, that our hydrant water can only become dangerous by long continued contact with the leaden pipe. Hence, the complete protection afforded by the simple precaution of never using the water that has been long at rest in the pipe. It is stated, that a gallon of water will fill 117 feet of ½ inch pipe, 75 feet of ⅝ inch pipe, 52 feet of ¾ inch pipe, and 29 feet of 1 inch pipe. As seldom more than 50 feet of pipe are required to connect the house hydrant with the iron street main, one gallon drawn in the morning and thrown away, will completely empty the ½ inch, the ⅝ inch, and the ¾ inch pipes, and two gallons drawn will empty the inch pipe. After that, the water comes directly from the iron main, and in ordinary daily use will not be allowed time to become contaminated by contact with the lead.

Respectfully, &c.,
William E. A. Aikin.

Tarrytown, N. Y.—At an annual meeting of the Tarrytown and Irvington Union Gas-Light Company, held at their office, March 23d, 1864, the following named gentlemen were elected officers: Wm. C. Townsend, President; Chas. A. Warford, Secretary; Seth Bird, Treasurer; J. H. Brown, Superintendent and Assistant Secretary.

Newbern, N. C.—After consultation with the military authorities, the United States Treasury agent has taken possession of the gas-works in Newbern, as abandoned property, and will soon be prepared to receive propositions from responsible parties with a view of putting them in operation.

Nearly eight-tenths of the property is said to belong to insurgents who abandoned the works and fled to rebeldom when Newbern was captured by Gen. Burnside.

Explosion in Hungary.—On the 8th of January last, a fatal explosion of gas took place at the corner of Waizner and Mohrengasse streets, Pesth, Hungary. By this catastrophe three persons lost their lives. The origin and cause of the explosion seems to be involved in mystery, and various parties attribute it either to gas, petroleum, or gunpowder.

Gas in Spain.—The *Credit Mobilier*, of Madrid, to which the gas-works of that city belong, propose to form a special company for managing the same.

PETROLEUM.

At the last ordinary meeting of the Society of Arts, of London, Professor Williamson in the chair, an important lecture was delivered by Dr. Marcet, F. R. S., "On Petroleum, its Economic Value, and a visit to the Petroleum Wells of Canada" As many of our subscribers are interested directly or indirectly in the petroleum trade, we give an abstract of this lecture, and a short report of the discussion which it occasioned We are indebted to the London *Ironmonger* for the report of the lecture.

Dr. Marcet, after giving some account of the geographical distribution of petroleum springs, proceeded to sketch the history of the American petroleum now so largely consumed in the United Kingdom. Although the oil had long been known to the American Indians, it did not come into general use until after 1853. There was then a well, or pit, on the premises of Messrs. Watson & Co., lumber dealers, in Titusville, which from time immemorial had produced oil floating at its surface; this was collected for medicinal purposes by absorbing it in blankets. Dr. Brewer conceived the idea of using this oil for lubricating and illuminating purposes. This was the beginning of a business which now amounted in value to several millions of dollars per annum. Dr. Brewer induced a company of gentlemen to take an interest in the undertaking, and the Pennsylvania Rock-oil Company was formed in the autumn of 1854, with a nominal capital of 300,000 dollars; this corporation was regarded, however, as a fancy stock concern, and the shares soon declined to a merely nominal value. In the winter of 1854 Professor Silliman analyzed the oil, and reported so favorably thereon, that large investments were made in the stock of the Pennsylvania Company; but the enterprise languished for several years, until in 1858 Mr. Bowditch and Colonel Drake, who had been sent out to work the property, conceived the idea of digging a well on the lands which had yielded so promising a surface show of oil, and were rewarded by pumping first 400, and afterwards 1,000 gallons of oil per day. Adventurers then flocked to Oil Creek. Some were successful, while others, exhausting all their funds, were compelled to relinquish their hopes. One spring was sunk, in 1850, from which flowed, with pumping, about fifty to sixty barrels per day; this was considered marvellous. In 1861, the first large flowing well was struck, which ran about 1,000 barrels per day; but before arrangements could be made to secure this source of wealth, the well caught fire, and twenty-two persons were burnt to death. Shortly, after a well was dug on the land of Brewer, Watson & Co., which yielded the enormous quantity of 2,500 barrels per day. Another and another flowing well was struck, until the produce became so large, that the market, in the infancy of the trade, was overstocked. It was estimated that the production in the winter of 1861–2 was 15,000 barrels per day, and the price of the oil declined to ten cents (5d.) per barrel at the wells. The consequence of this was, that the low price favored the introduction of the oil into domestic use, and had created an export demand which had constantly been increasing. Thousands of wells had been bored in the Oil Creek Valley, Pennsylvania, but it was estimated that not more than 15 per cent. had been productive. One was bored to the depth of 1,006 feet (the deepest well of all), but it produced no oil. Boring for oil was, in fact, a lottery; some obtained rich prizes, but more were ruined; and the valley was dotted with dilapidated derricks—the melancholy monuments of departed hopes and ruined fortunes. The prospects of the Pennsylvania wells, although in no way discouraging, were not so promising as might have been expected. The supply of oil was kept up, but there was little chance of increasing the produce of the district until the well-owners adopted an improved method of working. The present process of reckless honeycombing the land let out the subterranean gas, which gradually failed to force up the oil; it also admitted water into the wells, effectually stopping or drowning them. Both the total exports of rock-oil from America, and the imports into this country, had increased in a remarkable manner during the year 1863. Thus the actual export from America to all parts amounted to 27,139,467 gallons in 1863, against 10,318,658 in 1862; the import into London 98,000 barrels, against 28,335; and that into Liverpool 145,000 against 80,000. Dr. Marcet stated that a great supply of rock-oil had been opened in Wallachia, and concluded that our new trade would not be destroyed even should the American supply fail.

Having referred to the results obtained by Dr. Frankland, the lecturer proceeded to describe the results of some experiments on the lighting power of petroleum, which he himself had performed by the aid of an improved photometer, constructed for him by Mr. Sugg. The petroleum and lamps used in these experiments were procured from the Metropolitan Light Company, in the Strand. A lamp was provided, with a flat wick six-eighths of an inch broad. It was filled with petroleum, and lighted; and the light was found to be equal to 6.5 sperm candles; one-half of the oil was now removed from the lamp, and the lighting power of the flame again tested, when it was found equal to 6.3 sperm candles; finally, the remaining bulk of oil was again reduced to one-half, when the lighting power of the flame was diminished to four candles, or only about two-thirds of that it possessed when the lamp was full. With this small quantity of oil the wick rapidly charred, and the flame assumed an irregular shape. From this experiment it might be concluded, that a petroleum lamp must not be much less than half full to give out its best light.

The shape and surface of the flame were also found to affect materially the amount of light emitted, the best shape being that expanding like a fan, and flat at the top; when tapering into a point at the top, the light was not nearly so good. The shape of the flame depended on the trimming of the wick, the best mode of trimming being to cut the wick straight across, and bevel the edges laterally, so as to give the top of the wick a slightly convex shape laterally; with a wick an inch broad, the corners might be cut off, to prevent the risk of the lamp chimney breaking; a little practice would quickly enable anybody to prepare the lamp in the proper way.

The light of different lamps varied according to the size of the wicks. Dr. Marcet thought that lamps with wicks six-eighths of an inch broad would be mostly used, as the light emitted was a good one, and fit for all practical purposes; when properly trimmed, with a full supply of oil of an average quality, and the wick turned up as high as possible without smoking, these lamps would give a light equal to six and a-half sperm candles, with a flame one and five-eighths of an inch broad near the top, and as high as it is broad. If, instead of placing the broad surface of the flame opposite the disk of the photometer, the narrow, or side surface, was turned towards it, the light emitted was was found to be only equal to five candles instead of six and a-half.

Dr. Marcet had also examined the light of a smaller lamp with a wick a little over half an inch in breadth; the light given out under the same conditions as in the former experiments, was found to be equal to 4.8 sperm candles; this was a good useful light, and for the sake of strict economy was preferable to the other, and infinitely better than candles.

Dr. Marcet then described the results obtained by comparing the light given by a petroleum lamp with that given by tallow candles, composites, sperm candles, &c. We need not say that these results proved petroleum to be the most economical source of light. In comparing petroleum with gas, he had found that the latter, as supplied in London at 4s. 6d. per 1,000 cubic feet, was half the price of the former; but he believed that the oil presented many advantages over gas which would make up, in a great measure, for the extra expense, as, for instance, the portability of a lamp, the pleasant subdued light of petroleum, instead of the dazzling brightness of gas, and also the fact shown by Dr. Frankland, that there was less heat given out by petroleum than by gas, and less products of combustion injurious to health. Then, in many small towns, gas was very dear, and houses were but indifferently supplied with it; in other places, such as villages, country houses, there might be no gas at all, and in these cases rock oil became an invaluable boon.

The lecturer then referred to the objections to the use of petroleum—its smell, the danger of its taking fire under certain circumstances, and being explosive where its vapors were mixed with air; and also its effects on the health of those engaged in the refining trade.

Petroleum, as extracted from the earth, certainly had a very unpleasant smell, but it was never used unless previously refined, when its odor was thereby greatly diminished. A petroleum lamp burning in a room did not, as far as the lecturer's experience went, give any smell, although a number of lamps, kept filled and ready for use in American cars and steam-boats, certainly did emit a slight but unpleasant odor. It was principally when the lamp had just been put out, or whilst it was being trimmed, or filled afresh, that the smell was perceived; the odor was slightly unpleasant, but not unwholesome, except perhaps in the case of individuals engaged in the wholesale trade of the oil, as, for example, sailors on board ships laden with it, and workmen in refineries.

The danger of using petroleum from its being an inflammable, and, under certain circumstances, and explosive substance, ought not to be exaggerated. It should be remembered, that when coal-gas was first introduced, most serious objections to its use were entertained from its explosive power, and that this opposition had not prevented gas from being, at present the most extensive means of obtaining artificial light.

Most deplorable accidents had certainly happened from the use of petroleum, and it was of the highest importance that everybody who employed this substance should do so with due care. If a lamp containing properly refined petroleum, in a receiver made of earthenware or any other non-conductable substance, were allowed to burn undisturbed, there was little fear of an explosion; indeed, it was hard to say how the oil could become sufficiently heated within the lamp to give out inflammable vapor. It was only with petroleum of bad quality that such accidents would occur—when oil giving out inflammable vapors below the temperature of 126° Fahr. was used. To guard against this cause of accident, Dr. Marcet advised people to test their petroleum, and alluded to the simple test proposed by our contributor, Mr. Tegetmeier, also to the ordinary mode of testing with the aid of a thermometer.

The most frequent cause of accident was owing to the upsetting of a lamp, when the oil flowing out became kindled; great care should therefore be taken to place a petroleum lamp in some spot where it would not run the risk of being upset. The lecturer objected most decidedly to the use of petroleum on board ships; the confined state of a cabin making any article therein liable to be thrown down by an accidental back stroke of the hand, or some similar cause; but a still more serious objection applied to the pitching and rolling of the vessel at sea, which was likely to capsize any article that was not a fixture.

To avoid, as far as possible, accidents from upsetting of lamps, where petroleum or hydro-carbons are burnt, Dr. Marcet suggested that lamp-makers should never turn out a lamp as fit for use unless the foot, or the part under the oil receiver, on which the lamp stands, were a good deal wider than it was generally made at present, and unless the weight of the lower part of the lamp were increased, by the addition of lead or some such metal. Many of the cheap glass lamps, used at present somewhat extensively, for burning such substances as petroleum, were more or less top heavy, and a trifling additional expense would make them much steadier and much safer.

Supposing the case of a lamp upsetting and the oil taking fire, prompt measures would easily put out the flame, if the person on the spot did not loose his or her presence of mind; after placing the lamp upright, by throwing a cloth over the oil, or covering it with anything flat, to keep off contact with the air, the object would be speedily attained.

In order to obviate every risk of accident, as well as the smell, on board ships engaged in the petroleum trade, a new plan had been adopted and carried out on board the ship *Jane*, the property of the Liverpool and Ramsay Oil Refining and Chemical Works. The oil was stored in this ship in iron tanks, hermetrically closed; the whole operation of transferring the oil from the vessel to the premises of the company had

been effected without causing any nuisance whatever, as no smell of the oil could be perceived in the neighborhood of either the vessel or the works.

Dr. Marcet's account of his VISIT TO THE PETROLEUM WELLS OF CANADA IN SEPTEMBER, 1863, was so interesting, that we take the liberty of reproducing it without abridgement*:—

"The rock oil or petroleum wells which I visited in Canada, are situated near the southern extremity of Lake Huron, at a spot called Black Creek, in the district of Enniskillen. The town nearest the wells is that of Sarnia, built in a very picturesque bay of Lake Huron, and opposite Port Huron, in the State of Michigan. I stopped at Sarnia, with the express purpose of going over to Black Creek. A branch of the Great Western Railway of Canada connects the town of Sarnia with the village of Wyoming, sixteen miles distant, in a due east direction. From thence there is a high road proceeding nearly due south, by which Black Creek may be reached in a coach in two hours and a-half, the distance being twelve miles. The state of this road, cut out through a dense forest, is still most primitive, and much difficulty is experienced in conveying in drays the barrels of oil to Wyoming.

"Suddenly a gap in the forest makes its appearance, the road turns to the left, skirting a pool of dark and stagnant water, and the adjacent village of Black Creek comes into sight.

"The place has the appearance of being a rough clearing in a forest, crossed by a high road, on both sides of which are scattered a number of small wooden houses, containing a population of about 1,500 souls. In the intervening space between the houses and the wood, turf and stumps of trees may be seen; the Creek lies in a hollow, close to the village on its north side; its banks are now mostly barren of vegetable life, and here and there are felled trunks of trees, blackened as if by the action of fire, but on a closer inspection they are found to be covered with a black gummy coating of tar. The soil about these banks is black with the same material; and on the stagnant water of the pool floats a layer of a black oily substance on the top, emitting a smell of naphtha, and on a bright day exhibtiing a remarkable display of colors. Several rock-oil refineries have been erected on the banks of the Creek, into which they discharge the impurities of the crude oil.

"The existence of liquid bitumen in the limestone of Western Canada was pointed out as long ago as 1844, by Mr. Murray;† and in the year 1850, or shortly after, this gentleman described a considerable deposit of solid bitumen, or mineral tar, in Canada, extending over about half an acre; it was not, however, till 1857, that the distillation of this subject was undertaken, and I conclude that the account of the discovery of the petroleum springs which I heard related at Black Creek, refers to that period.

"This event occurred quite accidentally, as follows:—For some time previously a mass of semi-solid tar-like substance had been found in the forest, which, on being refined, yielded a small quantity of oil; it had been thought worth while to establish a refinery near this spot, and, with the view of obtaining water for the steam-engine, a well was sunk, when suddenly, instead of water, a stream of petroleum burst forth. The second spring was discovered about a mile further off, on a farm, where I understood pigs had been burrowing. Some oil had oozed out of the ground, and a well being dug there, it yielded a full supply of this valuable substance. Since then, no less than from 200 to 300 wells have been sunk upon an area of about two miles in length by one mile in breadth. At first, oil flowed freely from these openings, but the supply gradually diminished, and then ceased, being yielded spontaneously where it was found necessary to pump up the fluid. For about a year, none of the wells have yielded spontaneously flowing oil. A number of wells have been recently abandoned, as not worth working, so that at present there are not more than about 100 wells from which petroleum is obtained. I walked into the forest, and presently came to a steam-engine, placed under a shed, and used in boring a well. I was told that the depth then arrived at was 347 feet, and, so far, little or no oil had been found. When a well is about to be sunk, a convenient place is chosen, but there are no indications whatever to be adopted as a guide for the selection of the spot most likely to yield a good supply of petroleum. A shaft is first sunk through a layer of clay from 30 to 70 feet thick, then a layer of limestone rock is reached, and the boring effected by means of a steam drilling machine. The diameter of the pipe is about 3½ in.: several intelligent well-owners, whom I heard discussing the rate at which the boring operation is carried on, concurred in the opinion that from 1½ to 2½ feet was the depth attained every twenty-four hours. I was told by a competent judge, that the sinking of a well costs about three dollars per foot, and that there is no certainty as to the result. The operation may be a complete failure, or prove a very lucrative one; but the probability of success is much less now than formerly. On one occasion, it took nine months to drill through 550 feet of rock, at an enormous expense, and no oil was found. The deepest well which is now being worked attains a depth of 250 feet in the rock. Most of them are from 150 to 200 feet in the rock. The pumps used to raise the oil out of the wells are generally worked by steam-power; but sometimes the operation is carried on by means of horses, and occasionally by hand. The object of pumping, besides that of raising the oil, is to remove the water which continually accumulates in the well. Where a steam-engine is continually kept at work, oil and water are raised together; but if the operation be discontinued for any length of time, it will be found necessary to pump out water alone, before any oil can be extracted.

"In my ramble through the forest I saw two men engaged in pumping a well by hand; they told me that after pumping up water for a whole day, about a barrel of oil (or forty gallons) rose to the surface during the night; this they ladled out the following morning, and then proceeded again to pump out the water. The men informed me of a very ingenious method which they adopted for measuring the thickness of the layer of oil in the well; for this purpose they let down into the oil an empty bottle, fastened to a string, with the opening turned upwards. The depth to which it was necessary to lower the bottle, in order to fill it with water, indicated the thickness of the oil stratum. It will be understood that when the bottle was immersed into the petroleum it became filled with this substance, but as soon as it reached a spot below the oil, the water of the well, on account of its greater weight, displacing the oil from the bottle filled it at once. I visited several wells where oil and water were pumped out together, by means of steam-power; a black stream issued from the spout, the depth of color of the fluid continually changing according to the proportion of the oil present. The liquid was received into a large wooden tank, first falling on a splashing-board, which afforded better means of judging of the color of the stream, and thereby ascertaining roughly the quality of the oil; only one per cent. of oil gave the stream a very dark color. I myself collected the fluid contained in this bottle by placing it under a pump-spout while water and oil were being raised out of the well. The tank was generally about ten feet diameter by seven feet deep; its upper part was occupied by a layer of crude oil, which, being much lighter than water, had quickly risen to the surface. This crude oil presented an intensely black color and a thickish consistency. I was informed that when it has reached a certain height in the reservoir it is let out by a side pipe, by which it passes into a smaller cask, which contains nothing but the oil; by opening a tap at the lower part of the tank the water is allowed to escape. This simple method effectually separates, without trouble, the petroleum from the water with which it was originally mixed. The crude material is let out from the smaller cask into barrels, each containing forty gallons. The pump I have sketched raised the oil from a well 246 feet deep from the surface, and 196 feet deep went through the rock. I observed two wells close to each other, and pumped out by one steam-engine; they were both sunk to a depth of 225 feet through the rock, and 270 feet from the surface. I was given to understand that the pump-shafts opened at about thirty feet from the bottom of the wells, but there is no rule as to the distance intervening between the end of the pump-pipe and the bottom of the well; this varies, in different wells, from ten to thirty feet. My attention was directed to the escape of gas occurring at the mouths of the pipes through which the oil was pumped out of the two wells I was observing. This gas imparted to light a peculiar oscillation, which revealed its presence. No positive information can be obtained as to the distribution of the oil in the bowels of the earth; it is invariably found, at Black Creek, in limestone rock; and we may surmise, that in order to yield oil, a well must strike one or more fissures through which this fluid is slowly flowing. The petroleum appears to be washed out of the fissures by water, but I am not aware of any evidence showing that water does not enter into the well through other channels. The pressure exerted on the openings into the oil-bearing fissures by the column of water which accumulates in the well is a great obstacle to the flow of oil; and on this account it is important to keep the pumping-engines at work day and night. If the operation be discontinued even for a few hours, it will be necessary to pump up water for a still longer time before any oil can be obtained. I have previously stated that when the springs were first discovered a large quantity of rock-oil was discharged spontaneously. This phenomenon appeared due to the pressure exerted by a certain quantity of gas confined in a cavity between the surface of the fluid and the rock, the oil being thereby pressed out with much force through the fissures existing in the rocky reservoir; from the remarkable circumstance that the wells all ceased flowing spontaneously at about the same period, it does not appear improbable that the various springs issued from one original mass of the substance in question. The oil ceased flowing, apparently, because the gaseous pressure in the oil-trough became relieved, from the gas escaping through the wells.

"There is much uncertainty as to the origin of petroleum. Professor Leslie* observes 'that oil is not found in immediate contact with coal-beds made of land or fresh-water plants; but, on the other hand, coal-oil regions are geographically connected with coal-bed regions, whether of Devonian, carboniferous, oolitic or tertiary age.' Another statement of Professor Leslie appears to show that petroleum may also have an animal origin; for he observes, 'The coniferous limestone next above the Niagara has the cells of its fossil corals filled with petroleum, the remains of the gelatinous coral animal which inhabited them.'

"The crude oil is conveyed at once to the refineries, many of these establishments being close to the wells at Black Creek. The object of the operation of refining is to separate the oil from the tar, and to remove from it certain volatile constituents, among which is a compound very combustible and explosive at comparatively low temperatures. This oil is also discolored, and, in a great measure, deodorized, before leaving the refinery. The usual mode of proceeding is to commence by submitting the crude oil to distillation; the first portions of the fluid which distil over contains the dangerous compound, and is set aside; the residue is pumped up into a large vat, where, by means of steam-power, it is briskly stirred with sulphuric acid and water. During this operation a large quantity of sulphurous acid is formed, and the fluid assumes a white, milky appearance. The amount of sulphurous acid evolved is so great that none but men accustomed to the work can remain in the room where the operation is being carried on. This I had an opportunity of ascertaining to my own discomfort; and I feel assured that this part of the business of refining rock-oil must be very unhealthy. After a certain time, the stirring is discontinued, when the liquid divides into two layers, a lower layer, exhibiting the appearance of a white emulsion, and a higher one, consisting of pure oil The lower portion is now drawn off by opening a tap at the bottom of the vat; more water is added to the oil from above, and the stirring-rod is again set in motion; this operation is repeated several times, until the whole of the sulphuric acid and impurities have been washed out of the petroleum. It is now nearly colorless, and its smell becomes much less perceptible.

"I witnessed the various processes carried on in petroleum refineries at Black Creek, but never saw any kind of alkali used. I believe, however, the final

* *Journal of the Society of Arts*, February 26.

† *Philadelphia Coal Oil Circular*, Sept 2, 1862.

* "Coal Oils," by T. P. Leslie, Professor of Mining, University of Pennlysvania.

treatment with some alkali is frequently, if not always adopted.

"Before barreling, the oil is usually tested, to make sure that the temperature at which it takes fire is sufficiently high. Mr. Price, formerly chemist to the now dissolved Oil-Well Company of Canada, who kindly supplied me with much interesting information on the refining of crude petroleum, presented me with this specimen of refined oil, which he told me could be heated to 180° without taking fire. I sincerely regret having just heard that this able and obliging chemist died at Black Creek in November last.

"The supply of rock-oil in Canada has considerably decreased of late. While at one time one spring yielded no less than about 2,000 barrels in twenty-four hours, in September last the whole quantity of petroleum extracted weekly from the Black Creek wells did not exceed from 700 to 800 barrels."

The discussion which followed Dr. Marcet's able and interesting paper was opened by Mr. W. B. Tegetmeier, who said he was glad that Dr. Marcet had taken so high an inflaming point as the standard of safety in petroleum products, for it was notorious that many deplorable accidents had resulted from the use of oils that were generally supposed to be of a safe character. The present Petroleum Act did not prevent the sale of highly dangerous oils, and its provision against the storage of large quantities of these products could be easily evaded. He held in his hand a bottle containing a portion of the identical liquid which had recently caused the sad accident in the Brixton Road, a liquid which gave off an inflammable vapor at the temperature of 54° Fahr. He now exhibited a sample of the very oil which had caused the death of three persons at Oxenhope. This ignited at the temperature of 98°. Again, he displayed a petroleum product which was sold openly at a shop in the Strand—not the one referred to by Dr. Marcet—and which gave off inflammable vapor at the temperature of freezing water. These very volatile hydrocarbons were of a most dangerous character; they were much more dangerous than gunpowder, for there was no need to bring a light to them—their vapor would run to the light. It must not be supposed that he objected altogether to the use of petroleum or parraffin oil for lighting purposes. He had strongly advocated the employment of the mineral oils, and was only anxious to check the traffic in those which were allowed to retain their more volatile constituents. He believed that the well-prepared oils were perfectly safe, and had publicly called attention to the extraordinary fact that while 124 fires in the metropolis had been caused by gas, only two had been traced to the mineral oils. He had now a most important communication to make—a serious but unpleasant duty to perform. He charged certain Government officers with recklessly endangering public property of the most valuable kind, as well as hundreds of lives that ought to be regarded as peculiarly precious. He now held in his hand a bottle containing the most volatile and dangerous petroleum product he had ever examined—a liquid that gave off volumes of inflammable vapor at all temperatures, and which he would prove to them could be readily ignited by merely bringing a light to the vapor. (Experiment shown.) Now, when he declared that this remarkable liquid was used, by the sanction of the Admiralty chemist, for lighting that noble ship the *Warrior*, he thought that those present would acquit him of making an unfounded or trivial charge. (A voice—"How is the liquid used?") The liquid was placed in a vessel called a "generator," through which a stream of air was blown, and this air, saturated with vapor, was burned at jets, and called by the ridiculous name of "ozone gas."

Dr. Bachoffner doubted whether any one could be foolish enough to call the napthalized air "ozone gas," for "ozone" was simply an allotropic oxygen. There was a great difference between burning an inflammable liquid in a lamp, and using it for impregnating air with vapor, as suggested by Mansfield. He would not speak further upon the *Warrior* question, as he did not know all the facts which were connected with it. He saw many objections to the use of the mineral hydrocarbons as burning fluids, and did not think them superior to the camphine or rectified oil of turpentine formerly used. With regard to the use of the lighter petroleum products as substitutes for "turps," he had found that paint prepared with them did not dry hard, but remained sticky.

Mr. Madden stated that the lamps commonly used for burning the mineral oils were all based on an invention made some time before Young's lamp was introduced.

Dr. Paul denied that the system of lighting the *Warrior* was fraught with danger, and boldly asserted that the inflaming point of an oil afforded no indication respecting its character for safety. He himself had long used in an ordinary lamp a liquid which gave off inflammable vapor at 32° Fahr., and which commenced to boil at the low temperature of 70°, or about 5° above the ordinary temperature of his apartment. It was most desirable that there should be an interchange of opinions on a subject of such importance, but he thought that no good could result from violent attacks upon the scientific men who had recommended the system of lighting, about which there had been an attempt to get up a sensation. The peculiar properties of the liquid employed actually rendered that system absolutely safe, and Mr. Tegetmeier's opinion as to its danger had no scientific foundation. He (Dr. Paul) would not trespass any further on the time of the meeting; and he trusted that he should hear some remarks upon petroleum from a gentleman present who had brought that substance from Burmah long before any American petroleum entered English ports.

Mr. Gardner stated that the vapor of petroleum was not nearly so dangerous as was generally supposed. It was almost impossible to make it explosive by mixing it with atmospheric air. A slight puff was all that could be obtained in an ordinary way—nothing like the explosion of a mixture of oxygen and hydrogen.

Mr. G. Wilson (Price's Candle Company) thanked Dr. Paul for having referred to him in connection with the Rangoon petroleum, which had been so carefully studied by Mr. Warren De la Rue. The commercial product known as "Belmontine" was certainly one of the first petroleum products used for lighting purposes in England, but its introduction followed Mr. James Young's experiments on the petroleum of Derbyshire, and his discovery of the mode of distilling an artificial petroleum from coal. Mr. Young was, therefore, to be regarded as the originator of the branch of industry which had recently been so greatly developed. With regard to the use of the light petroleum product on board the *Warrior*, there was certainly a great difference between burning it in a lamp and burning its vapor at a safe distance from the generator; still he thought that the splendid vessel, which had cost the country so much money, was scarcely the place for the trial of a new and delicate experiment in illuminations.

The Chairman (Professor Williamson) having referred to certain points in Dr. Marcet's lecture, touched upon the great subject of discussion, and truly observed that the danger of using any substance did not depend so much upon the properties of the substance as upon the manner of using it; thus, gunpowder was only dangerous when carelessly handled. He could not condemn the authorities for adopting a certain system for lighting the *Warrior*, until he knew what precautions had been taken in storing the inflammable liquid. If the new system could be employed anywhere with safety, surely a man-of-war, where perfect discipline was observed, would be the place. In the name of the meeting, he begged to tender to Dr. Marcet a most cordial vote of thanks for his interesting communication.

PATENTS.

41,672.—B. B. Bignall, Owego, N. Y., for a Water Elevator:

I claim the reel, B, having the spurs, k k, of nearly the same transverse thickness at the base and top, and the bearings, l l, respectively on each side of the spurs, for the support of the chain, substantially as herein set forth.

I also claim the toothed reel, B, constructed as described, with the main chain, C, auxiliary chain, C,' and bucket, D, all arranged and operating substantially as and for the purpose herein specified.

41,697.—James S. Gray, New York City, for a Gas Stove:

I claim, first, The combination of the wick-tube, the vapor-tube, the valves, the wire-gauze screw, and the heater-cap, with the central air-tube, substantially in the manner described for the purposes set forth.

Second, The central tube, K, combined with the outer tube, J, as set forth.

41,702.—James Higgins, Cambridge, Mass., for a Lamp:

I claim the combination of the two concentric elliptical tubes f g, the circular cup, D, provided with an elliptical flange, d, and the circular removable plate, A, provided with an elliptical guard, k, all the said parts being constructed, arranged and employed in the manner and for the purposes herein specified.

41,751.—Lewis J. Attwood, Waterbury, Conn., for a Lamp:

I claim, first, A straight, or nearly straight, connection, extending from the moving part of the ring or hinge to the ratchet-cap, when said connection is fitted so as to swing at its end; in opening or closing, and form a diagonal brace to the chimney when turned back, as and for the purposes specified.

Second, I claim connecting the straight swinging-rod to the chimney-holder, by the head and elongated opening for the rod, as specified, whereby the rod is allowed to turn as the chimney-holder is moved on its hinge, as set forth.

41,832.—Dominic E. Contaret, New York City, for Preparing Artificial Fuel:

I claim the use of compounds known in chemistry under the name of insoluble soaps, in order to effect the agglomeration of small common fragments of anthracite, and obtain the infusible fuel prepared as described.

41,840.—George W. Gladden, Cincinnati, Ohio, for a Lubricating Compound:

I claim lubricant composed of residuum from the distillation of petroleum, pine tar and plumbago compounded, substantially in proportions and manner specified.

41,846.—Henry C. Hutchinson, Cayuga, N. Y., for a Lamp Burner:

I claim a deflected wick-tube with a lateral opening for the flame substantially as described, whereby a wide flame may be obtained from a small wick-tube and a free access of air to the base of the flame, in whatever direction it may burn from the tube.

41,858.—Elijah Freeman Prentiss, Philadelphia, Pa., and Robert Adam Robertson, Liverpool, England (patented in England July 31, 1862), for an Apparatus for Distilling Rock Oil and other Hydrocarbons:

We claim, first, The combination of the still, A, the injecting worm, a4 a5 a6 a7, and the central tube, G G' G".

Second, Roughening the surface of the injecting worm or tube, a5 a6 a7, to render the ebullition regular and quiet.

Third, The combination of the still, A, with the series of columns, three or more, each column being set and maintained at the temperature necessary to separate the product condensible at such temperature, whereby at one continuous operation the crude oil is separated with the various products due to condensation at the different temperatures fixed upon.

Fourth, The arrangement of the vapor-tubes and oil-spaces in columns, B B''' or C C''', whereby the crude oil on its way to supply the still, A, is made to act as a condensing-bath to the vapors in these columns, coming from the still, A.

Fifth, The arrangement of the columns, B B''' and C C''', in combination with the still, A, and the movable exit-tube, g", whereby the operation of the still is rendered continuous.

Sixth, The air-regulator, or its equivalent, for regulating the temperature of the respective columns, or either of them, in combination with the pipes of supply of the heating and cooling media.

Seventh, The water-legs, X, and the floats, Z, for regulating the escape of of water from the columns.

Eighth, The auxiliary heads, V V', for enabling the oil-bath in each column to act as a still.

Ninth, The warming of the bottoms of the chambers which are at the bases of the columns by means of steam chambers arranged and operating as shown above.

Tenth, The warming of the bottom of the column on which the still, A, is supported, substantially as above described.

41,871.—Alexis Thirault, New York City, for Distilling Rock Oil:

I claim, first, Subjecting petroleum or rock oil to repeated evaporations by condensing the vaporous products in one and returning the condensed liquid to the still through another pipe, substantially as and for the purpose specified.

Second, The arrangement of the condensing-pipe, D, funnel-shaped conductor, E, and return-pipe, F, in combination with the still, A, constructed and operating substantially as and for the purpose described.

Third, The arrangement of the rectifier, H, in the interior of the still, A, in combination with the condensing-pipe, D, funnel-shaped conductor, E, return-pipe, G, and condensing-pipe, I, all constructed and operating substantially in the manner and for the purpose herein specified.

41,901.—M. C. Bignall, Seneca Falls, N. Y. (ante-dated March 14, 1864), for a Water-Elevator:

I claim the cross-board, E, provided with the opening or passage, k, when said board performs the double office of guiding the counterpoise rope, belt, or chain, and thrusting the lower part of the bucket toward the spout or trough, as arranged with the chain, C, and reel, B, substantially as herein set forth.

41,920.—John A. Heyl, Boston, Mass., for Opening and Shutting Gas-cocks by Electro-Magnetism:

I claim the arrangement of the lever, G, which carries the armature of the electro-magnet, and the pawl for operating the ratchet-wheel of the stop-cock, to work upon a pivot or fulcrum formed upon the plug of the stop-cock, substantially as and for the purpose herein specified.

41,930.—Charles C. Lloyd, Philadelphia, Pa., and Robert M. Potter, New York City, for a Gas-Regulator:

We claim the combination of the two concentric chambers, E L, communicating at bottom through contracted apertures, d d, the central supply-pipe, C, rising vertically within the chamber, L, the annular float, F, bridge, e, conical valve, B, small air-hole, f, in chamber, E, and discharge aperture, b, in the upper part of the chamber, L, when the said parts are constructed and arranged, and operate as herein specified.

41,939.—J. W. Pitt, North Adams, Mass., for a Method of Connecting Governors with the Gates of Water-Wheels:

I claim the applying of a governor to the gate of a water-wheel, in the manner substantially as described, so that the gate in opening will move with an accelerated or gradually increasing speed, and in closing move with a corresponding diminution of speed to compensate for the varying force of the water at different heights of the discharge-orifice, as set forth.

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PATENT

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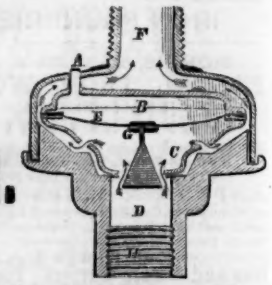

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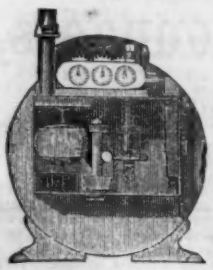

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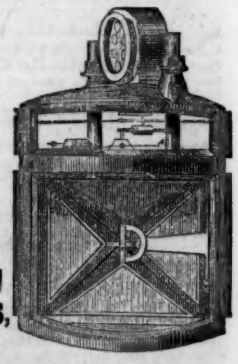

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It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though sold at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, rouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Four Cents per Pound.

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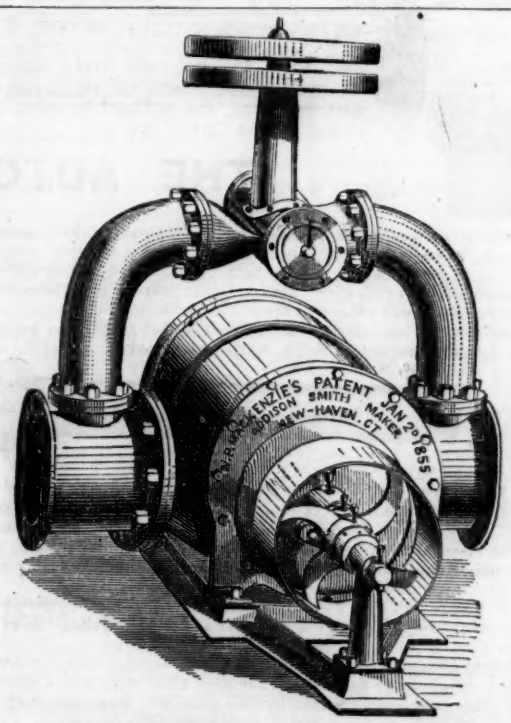

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Sole Proprietors and Manufacturers of

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AND

PATENT COMPENSATOR.

They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the production and illuminating power of the gas, and add very much to the durability of the retorts, either clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durable, cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

We are also sole proprietors and manufacturers of the

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The Blower is a Force Blast machine, durably built, and can be driven with one-third the power required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 tons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent. uel Address SMITH & SAYRE, 458 Broadway, New York.

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For sale, Parrish's Patent Gas and Air Mixer, adapted to all works using Petroleum or other oils, by which rich Petroleum Gas is mixed, after it leaves the holder, with a proper proportion of air, giving it the greatest illuminating power, without smoke, through any burners. The apparatus being attached to the outlet pipe, requires no alteration of the works.

Apply at the Gas-Works of St. Nicholas Hotel, No. 63 Mercer st., N. Y., where one can be seen in operation; or address D. Parrish, Jr., St. Nicholas Hotel, New York city, or No. 1416 Arch street, Philadelphia.

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ROBBINS' PATENT GAS AND WATER JOINT.

THE PROPRIETORS of this unrivalled joint are now prepared to introduce it to general use, and to guarantee that, in all respects, it will fulfil perfectly all the requirements of either water, gas, or steam. It is a joint which remains in all situations absolutely tight.

The following illustrations, with the appended explanations, will give a good idea of the improvement:

Fig. 3.

Fig. 1.

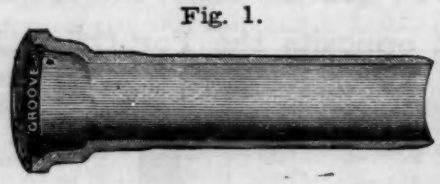

Fig. 2.

Fig. 4.

FIG. 1. Is a sectional view of a pipe showing a groove to receive a lead ring.

FIG. 2. Is a sectional view of a pipe showing a lead ring in the groove.

FIG. 3. Represents a former, which is used in the bell end of the pipe while casting the lead ring. Before using the former, however, a strip or belt of India rubber is first inserted in the socket, against which the former rests to prevent the lead escaping from the groove while being cast. Upon the cooling of the lead, the former and rubber ring are withdrawn from the socket, and the lead ring is left projecting inwards from the groove all around, forming an indestructible packing to receive the spigot-end of the pipe.

FIG. 4. Shows two pieces of pipe in connection with an hydraulic jack, by which the spigot-end of the pipe (which is cast tapering and may be cast in a chill), is forced into the lead ring in the groove which perfects the joint. A, represents the jack; B, B, the chains by which the pipes are drawn together; and C, C, pieces of pipe.

This ring joint packing may be cast at the foundry or any convenient place, and when delivered at the ditch, may be laid, and perfect joints formed, by any laborer, above or below the surface, or in ditches filled with water, there being *no joint ditching required*, and it can be laid with very great rapidity.

Among the economies realized by this joint may be enumerated, the saving in the weight of the pipe, in the amount of lead required to be used in forming the packing, in the labor of ditching, and in laying the pipe.

The bell or socket may be cast one-half the usual length, as the width of the groove requires, but from a half to one and a half inches, according to the size of the pipe, thus saving in the total weight about two hundred pounds per ton.

The weight of lead required to form this joint, as compared with the amount of lead used in forming a joint according to the old method, is fully seventy-five per cent. less, only so much being required as to maintain the compensating principle, or enough to allow (upon the raising or depressing of the line of pipe out of a direct line) what is lost upon one side of the ring packing, to take its place upon the other; thus securing flexibility of the joint without affecting its reliability. The use of yarn or hemp packing is dispensed with, the cost of which is an entire saving as compared with the old method of making joints.

The saving of labor in ditching is the total amount usually expended in digging joint-holes, there being *no joints to be caulked.*

The saving in labor in laying pipe furnished with this joint is a sum equal to the whole cost of carrying lead, fuel, ladles to the ditches, casting the lead, bailing out water, and the entire labor of caulking, less only the sum charged for casting the lead ring packing at the foundry, which is comparatively trifling. This last-mentioned economy has been estimated by the best engineers at seventy-five per cent., or the same as the saving in the quantity of lead used.

The cost of pipe cast from our patterns is the same per ton as pipe cast for the old form of joint. The principal iron-founders propose to charge the same price.

We have submitted these joints in water-pipes to a pressure of two hundred and fifty pounds to the square inch, and they have remained perfectly tight. It has also been submitted for months in gas-pipes to the ordinary pressure of our city gas-mains, without any leakage whatever. We are aware that these statements may be deemed by many extravagant, but the merits of the improvement warrant them all, and the most skeptical may be fully convinced by an investigation of its value, and by witnessing the tests to which we submit it, or by its use under any conceivable circumstances.

TESTIMONIALS.

OFFICE OF THE WATER COMMISSIONERS,
CITY HALL, JERSEY CITY, October 14th, 1863.

Dear Sir,—On the 26th of May last, about two hundred and sixty feet of cast-iron water-pipes, six inches in diameter, with joints constructed according to your invention, were laid for the Jersey City Water-Works, in Prospect street.

The operation of uniting the joints of the pipes, was performed with remarkable facility, and with an important saving in time, materials, and labor. The joints proved perfectly water-tight, after turning the full head of water on the pipes.

In my opinion, your invention has proved entirely successful, and will be found highly beneficial to water companies.

Yours, respectfully,
ROBT. C. BACOT,
Superintendent and Engineer, Jersey City Water-Works.

MR. R. C. ROBBINS.

ENGINEER'S OFFICE, CROTON AQUEDUCT DEPARTMENT.

Dear Sir,—I have examined your plan for making joints in cast-iron water pipes, and have a report from one of my assistants, of certain experiments made by you, to prove the certainty and economy with which the joints can be made, and their stability when finished.

I think the experiments showed that the joints could be made quite as rapidly, if not more rapidly, than those made in the ordinary method now in use; the quantity of lead used was less than that required in the common joint, and no yarn packing was required. In these respects, your joint seems superior.

After the joints were made, a pressure of three hundred pounds to the square inch, was put upon the pipe in such a manner as to test the efficiency of the joint to prevent both leakage of water, and separation of the pipes from each other longitudinally. This pressure failed to produce either leakage at the joint, or separation, so long as the pipes lay in a direct line; but on deflecting them six and a half inches, in a length of twelve feet, the joint commenced leaking. It is fair to add, that this is a greater deflection than would often be found necessary in laying pipe.

I think the efficiency of the joint in both the points tested in this last experiment, might be increased by increasing the quantity of lead, both in thickness and width.

Altogether, the result of the experiments was such that I have determined to make a more thorough est of your invention by putting down about one thousand feet of pipe, when we commence our operations for the coming season.

The diameter of the pipe subjected to experiment, was six inches, and is the same size that I propose to put down next year.

I am, very respectfully, your obedient servant,
A. W. CRAVEN, Chief Engineer, &c.

To R. C. ROBBINS, Esq., Jersey City.

METROPOLITAN GAS-WORKS,
ENGINEER'S OFFICE, NEW YORK, October 9th, 1863.

Dear Sir,—The undersigned had the pleasure of being present at an experimental test of your patent joint for gas and water pipe, made at the yard of the Croton Aqueduct Department, and cheerfully testify to the results obtained, namely:

First experiment was made with two lengths of eight-inch pipe, jointed together, when a pressure of three hundred pounds to the square inch was applied. This pressure did not force the pipe apart, nor start the joints, but they remained, during this experiment, perfectly tight.

Second experiment was made by deflecting the pipe five inches, which is about equal to eighteen inches in one hundred feet, and the same pressure applied, which caused a small leak at the joints.

Third experiment was made by taking the pipes apart and rejointing them, when the same pressure was applied when lying straight and when deflected; at this experiment there was no leakage.

From these severe tests it is my impression that the superiority of your patent joint has been made manifest, and that it must eventually supersede the old way of jointing pipes together, saving both time and material.

Wishing you success in your enterprise,

I am, very respectfully, yours, &c.,
AMBROSE J. WHITE, Engineer.

To R. C. ROBBINS, Esq.

OFFICE OF THE METROPOLITAN GAS-LIGHT COMPANY,
NEW YORK, October 9th, 1863.

Dear Sir,—Having been present at the testing of your patent joint for gas and water pipe, at the yard of the Croton Aqueduct Department, I can testify to the results as stated by Col. A. J. White and fully concur with him in the opinion expressed in his letter to you of this date.

Very respectfully, yours,
W. TITUS, Secretary.

R. C. ROBBINS, Esq.

NEW YORK, October 23d, 1863.

Gentlemen,—I am pleased to be able to inform you, that we are fully satisfied that we have done well in adopting your "Improved Joint," in the construction of an aqueduct which we are now building on Oil Creek, Northwestern Pennsylvania.

We have ten miles of three and four inch pipe to lay this season, and, in our estimation, the perfection of the joint, economy in lead, and rapidity with which the pipe can be laid, render it entirely preferable to any other method of laying pipe.

Our Mr. Hutchings advises us that he is putting down the three and four inch pipe at the rate of twenty-five to thirty lengths per hour, with two men in the trench. We are much pleased with this result.

Respectfully yours,
HUTCHINGS & FOSTER.

Messrs. R. C. ROBBINS & Co.

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